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TRANSMITTAL

To: Mr. Ravi Sanga, Remedial Project Manager
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
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Date: March 10, 2014

Project No.: 0995-001-04

Subject: Jorgensen Forge Property

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Please contact Ms. Dee Gardner at 206-306-1900 if you have any questions or require additional information.

Regards,

Abby Rothman
Project Coordinator
SoundEarth Strategies, Inc.

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DATA REPORT OF SOIL QUALITY ANGLE BORING RESULTS

SECOND MODIFICATION FOR THE ADMINISTRATIVE ORDER ON CONSENT FOR REMOVAL ACTION
JORGENSEN FORGE OUTFALL SITE—PHASE 4A/SHORELINE CONTAINMENT BARRIER

Property:
Jorgensen Forge Property
Jorgensen Forge Outfall Site
8531 East Marginal Way
Seattle, Washington

Prepared for:
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington

Report Date:
December 20, 2013

Data Report for Soil Quality Angle Boring Results, Second Modification for the Administrative Order on Consent for Removal Action, Jorgensen Forge Outfall Site—Phase 4A/Shoreline Containment Barrier

Jorgensen Forge Property
Jorgensen Forge Outfall Site
8531 East Marginal Way
Seattle, Washington 98101
CERCLA Docket No. 10-2011-0017

Prepared for:
U.S. Environmental Protection Agency
1200 Sixth Avenue
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Prepared on Behalf Of:
Jorgensen Forge Corporation
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December 20, 2013

SoundEarth Strategies

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ACRONYMS AND ABBREVIATIONS

AQEA	Anchor QEA, LLC
ASTM	American Society of Testing and Materials International
Axis	Axis Survey and Mapping Axis
bgs	below ground surface
BODR	Basis of Design Report
Boeing	The Boeing Company
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
Data Report	SoundEarth Data Report for Soil Quality Boring Results
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
F&B	Friedman & Bruya, Inc.
Fremont	Fremont Analytical
HASP	Health and Safety Plan
JFC	Jorgensen Forge Corporation
JFEAA	Jorgensen Forge Early Action Area Removal Action
JFOS	the area encompassing the northwest corner of the Jorgensen Forge Property and the southwest corner of the Boeing Plant 2 Property, subject to CERCLA Docket No. 10-2011-0017
LDW	Lower Duwamish Waterway
mg/kg	milligrams per kilogram
mg/kg dw	milligrams per kilogram dry weight
mg/kg OC	milligrams per kilogram organic carbon-normalized

ACRONYMS AND ABBREVIATIONS (CONTINUED)

MLLW	mean lower low water
MTCA	Washington State Model Toxics Control Act
Order	*Administrative Order on Consent for Removal Action, Comprehensive Environmental Response, Compensation, and Liability Act Docket No. 10-2011-0017*
PCB	polychlorinated biphenyl
Phase 4A	Tasks to be completed under the Second Modification to the Administrative Order on Consent for Removal Action, including additional sampling to characterize the extent of PCB contamination within the Jorgensen Forge Outfall Site and the installation of a sheet pile wall along the top of the LDW shoreline bank
Pipes	Two decommissioned stormwater conveyance pipes located along the north margin of the Jorgenson Forge Property
Pyron	Pyron Environmental, Inc.
QAPP	Quality Assurance Project Plan
SAP	Sampling and Analysis Plan
SMS SQS	Sediment Management Standards Sediment Quality Standard
SoundEarth	SoundEarth Strategies, Inc.
TOC	Total Organic Carbon
TSCA	Toxic Substances Control Act
Underbank Area	"Potential Additional Shoreline Bank Material Area" as described in the Second Modification to the Order
Visual-Manual Method	Standard Practice for Description and Identification of Soils

1.0 INTRODUCTION

This Data Report for Soil Quality Angle Boring Results (Data Report) has been prepared by SoundEarth Strategies, Inc. (SoundEarth) on behalf of Jorgensen Forge Corporation (JFC) and The Boeing Company (Boeing) pursuant to the *Second Modification to the Administrative Order on Consent for Removal Action* (Order) *at the Jorgensen Forge Outfall Site* (Second Modification; EPA 2013), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Docket No. 10-2011-0017, signed by JFC, Boeing and the U.S. Environmental Protection Agency (EPA) on June 25, 2013.

The purpose of the Data Report is to transmit to EPA the analytical results for bank material samples collected on October 8, 2013, from the western margin of the Jorgensen Forge Outfall Site (JFOS), and present the results in relation to the west-adjacent "Potential Additional Shoreline Bank Material Area" (Underbank Area) as described in the Second Modification. The data presented in this report define the nature and extent of contamination and support the coordination between anticipated bank removal action projects proceeding under separate orders.

1.1 PROJECT BACKGROUND

The Jorgensen Forge Property is bounded by Boeing Plant 2 to the north, East Marginal Way and King County International Airport to the east, Boeing Isaacson Property to the south, and the Lower Duwamish Waterway (LDW) to the west (Figures 1 and 2). The LDW is the subject of on-going environmental investigation and removal actions resulting from the identification of upland sources of contaminants, most notably polychlorinated biphenyls (PCBs), which have contributed to contamination of the LDW environment.

Two stormwater conveyance pipes (Pipes) located along the north margin of the Jorgensen Forge Property formerly discharged through the JFOS and into the LDW near the northwest corner of the Jorgensen Forge Property. As detailed in the *Action Memorandum for the Jorgensen Forge Outfall Site, Seattle, King County, Washington* (EPA 2010a), numerous environmental investigations documented the presence of elevated concentrations of PCBs in the Pipes, above the Washington State Model Toxics Control Act (MTCA) cleanup level for industrial soil (10 milligram per kilogram [mg/kg]) and EPA Regional Screening Levels for industrial soil and protection of groundwater (0.74 and 0.0088 mg/kg, respectively, for PCB Aroclor 1254)(EPA 2010a).

In 2010 and in accordance with the Washington Department of Ecology's (Ecology) request that EPA lead the cleanup activities, EPA issued an Administrative Order on Consent for Removal Action Order for the JFOS (EPA 2010b). Since the Order became effective in 2010, three phases of investigation have been completed in connection with the JFOS. The results of the Phase 1, 2, and 3 Investigations have defined the north, south, and east lateral extents of PCB-contaminated soil greater than 1 mg/kg dry weight (mg/kg dw) (Floyd|Snider 2011, AQEA 2012b, and AQEA 2013a).

Phases 1, 2, and 3 have further documented concentrations of PCBs exceeding 50 mg/kg dw, the concentration at which bulk PCB remediation wastes must be disposed of as hazardous waste, pursuant to Toxic Substance Control Act (TSCA) regulations, Sections 761.61(a)(5)(i)(B)(2)(ii) and 761.61(a)(5)(v)(A) of Title 40 of the Code of Federal Regulations. With the exception of the west lateral extent below the top-of-bank of the LDW, which is the subject of the Phase 4A investigation and this Data Report, the known lateral extent of soil containing PCBs at concentrations equal to or greater than 1 mg/kg dw is generally bound in a 30- by 70-foot area.

The primary objective of the investigation task under Phase 4A is to define the west lateral extent of the PCB-contaminated soil greater than 1 mg/kg dw. The west lateral extent of PCB contamination in the JFOS extends beyond the existing LDW top-of-bank line into the Underbank Area (Figure 3), which is defined in the Order and situated within the Jorgensen Forge Early Action Area (JFEAA).

The Underbank Area, JFOS, and JFEAA also adjoin the Boeing Southwest Bank Corrective Measure, and other activities proceeding under the Resource Conservation and Recovery Act Corrective Action Order at the north-adjacent Boeing Plant 2. Consequently, this Data Report also is intended to inform and support the practical coordination between and engineering design for concurrent, adjacent, and future anticipated removal actions, including the JFEAA Removal Action and Boeing's Southwest Bank Corrective Measure and Duwamish Sediment Other Area bank removal projects.

1.2 BASIS OF DESIGN

On September 13, 2013, SoundEarth submitted the Basis of Design Report (BODR) for Phase 4A to EPA on behalf of JFC and Boeing, and this Data Report presents the data associated with field sampling activities completed on October 8, 2013. Specifically, this Data Report presents the results of the activities described in BODR Sections 5.3 and 5.4.

On September 20, 2013, and November 5, 2013, EPA issued letters of conditional approval of the BODR, subject to the implementation of specific changes described in the letters. Consequently, the BODR for Phase 4A has been revised twice since completion of the field work, on October 20 and December 5, 2013. The following required revisions to the BODR reflect variance from the field protocols that were followed on October 8, 2013:

- In a September 18, 2013, telephone conversation with Deborah Gardner of SoundEarth, Jennifer Edwards of EPA directed SoundEarth to follow the Sampling and Analysis Plan and Quality Assurance Project Plan (SAP/QAPP) that Floyd|Snider prepared for Phase 1 (Floyd|Snider 2010), instead of the JFEAA QAPP that Anchor QEA, LLC (AQEA) prepared for the JFEAA bank removal project (AQEA 2013c). With respect to the scope of work presented in this Data Report, EPA's verbal direction altered the rate of collection of field duplicate and equipment rinsate blank samples.

- September 20, 2013, EPA Comment No. 4: "Modify the sentence to read: Tier 2 soil analyses will not be performed on samples where 4 consecutive feet of soil or bank materials contain PCB concentrations below 1 mg/kg dw."
- November 5, 2013, EPA Comment No. 1, Bullet No. 3: "...the lab cannot validate their own data and an independent third party reviewer is needed. Another party must validate the data and the validation stage must be stated..."

EPA's required revisions were addressed in the course of collecting, evaluating, and validating the data, identifying and describing variances from plan, and preparing this Data Report.

2.0 SAMPLE COLLECTION METHODS

At EPA's direction and as reflected in the BODR, Phase 4A field activities were performed in accordance with the SAP/QAPP that Floyd|Snider prepared for Phase 1 (Floyd|Snider 2010). SoundEarth followed the Health and Safety Plan (HASP) that AQEA prepared for the JFEAA bank removal project (AQEA 2013c), in accordance with EPA direction provided in the August 21, 2013, meeting between EPA and JFC. As described in Appendix B and Appendix C of the BODR, respectively, SoundEarth implemented the modifications to the Phase 1 SAP/QAPP and the JFEAA HASP that reflected the Phase 4A scope of work, personnel substitutions and scope of analysis.

2.1 SAMPLE LOCATIONS AND ELEVATIONS

On October 11, 2013, Axis Survey and Mapping (Axis) of Kirkland, Washington surveyed the locations and elevations of the completed angle borings and staked the location of Phase 1 soil boring T2B4 for reference. Axis' survey references North American Datum NAD 1983 and the vertical datum of Mean Lower Low Water (MLLW). Ground surface elevations at the time of drilling and sample collection ranged between elevation 14.5 and 15.0 feet MLLW.

State plane coordinates, elevation, bearing, and drilling angles for the Phase 4A angle borings and soil boring T2B4 are summarized in Table 1. As a consequence of advancing the borings at an angle, coordinates for each soil sample interval differ from the surface coordinates associated its reported angle boring location. The locations and completed footprint of each angle boring is shown in Figure 3, along with bank topography and pertinent site features.

In addition to the surveyed coordinates, and in accordance with the SAP/QAPP, SoundEarth recorded GPS coordinates associated with each angle boring location. The coordinates were recorded using a Trimble® GeoXT™ and should be considered accurate to within one meter.

2.2 DRILLING METHODOLOGY, ANGLE, AND BEARING

Angle borings were advanced on October 8, 2013, using a track-mounted Geoprobe ® Model 7730DT drilling rig. The drilling rig was operated by the state-licensed well-drilling firm Cascade Drilling, L.P., of Woodinville, Washington.

In order to collect samples within the Underbank Area west-adjacent to the JFOS, each angle boring was advanced at an angle of 30 degrees relative to the vertical plane, and oriented at an angle favorable for intersection with the target area (either north 90 degrees west or north 120 degrees west). Prior to advancing each boring, the vertical angle of drilling and bearing of each borehole were verified using a Brunton® pocket transit.

The alignment and footprint for each angle boring are shown on Figure 3. The location of Phase 1 soil boring T2B4 is included on Figure 3 for reference.

2.3 SOIL SAMPLE RETRIEVAL, COLLECTION, AND DESCRIPTION

Angle borings were advanced and soil samples were retrieved in five-foot continuous intervals. Borings were advanced and soil samples were retrieved using five-foot long, two-inch outer diameter, stainless steel rods fitted with a split-spoon sampler. The split-spoon sampler was fitted with a disposable, clear plastic (cellulose acetate butyrate) sleeve to contain and protect the sample during transport between the drilling rig and the sample collection work table. The split-spoon sampler was decontaminated in between each sample interval by triple rinsing first with tap water mixed with phosphate-free surfactant, tap water, and deionized water. Equipment rods and split-spoon samplers were decontaminated using the drilling rig's self-contained steam-cleaner in between each angle boring.

During advancement of each angle boring, SoundEarth related all depth intervals to angled feet below ground surface (bgs), uncorrected for drilling angle. In accordance with the scope of work described in the BODR, one soil sample was collected from each two-foot, angled sample collection interval, whenever adequate volume of soil was recovered. In accordance with the BODR, soil samples were composited from each two-foot sample collection interval. In each case where a two-foot sample collection interval intersected two five-foot rod intervals (e.g., 4 to 6 feet), and representative soil was recovered from both sample intervals, SoundEarth composited the sample between the bottom of the upper boring interval and top of the lower boring interval. SoundEarth assigned each soil sample with a unique sample identification number, placed each sample into laboratory-prepared glassware, and placed the glassware into a chilled cooler pending completion of field sampling activities and transport to the laboratory.

Soil samples were logged by a SoundEarth geologist in accordance with American Society of Testing and Materials International (ASTM) Method D-2488-06, Standard Practice for Description and Identification of Soils (Visual-Manual Method). The Visual-Manual Method is the protocol for field description of soils in accordance with the classification system defined in ASTM D 2487, Standard Practice for the Classification of Soils for Engineering Purposes (Unified Soil Classification System). The geologist also recorded the percent recovery for each five-foot boring interval; identified potential slough and heave conditions; described field-screening characteristics of color, odor, and sheen; and visually estimated relative ease or difficulty of equipment advancement through the soil formation.

Angle boring JFOS2-BH02 terminated above its target depth on a buried obstruction at a depth of 16 angled feet bgs and failed to intersect the Underbank Area. None of the soil samples collected from JFOS2-BH02 was submitted for laboratory analysis and no angle boring log is provided with this Data Report. The drilling rig was re-positioned and angle boring JFOS2-BH03 was advanced approximately 2.2 feet south of JFOS2-BH02. Angle boring JFOS2-BH03 was advanced to a depth of 35 angled feet bgs, at approximate elevation -15.8 feet MLLW.

Angle borings JFOS2-BH01, JFOS2-BH03, JFOS2-BH04, and JFOS2-BH05 met or exceeded the target depth interval of 30 angled feet below top-of bank elevation. Bottom elevations for the completed angle borings ranged from approximately -11.4 to -15.8 feet MLLW. Logs for the four completed angle borings are included with Appendix A of this Data Report.

2.4 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

The Phase 1 SAP/QAPP requires the collection of field duplicates at a frequency of approximately 5 percent (1 per 20), or a fraction thereof, of the total number of groundwater sample locations per sampling event, and the collection of equipment rinsate blanks at a frequency of 5 percent during solids sampling. No groundwater samples were collected in connection with Phase 4A investigation tasks; therefore, SoundEarth collected field duplicate samples at a rate of 1 duplicate for every 20 soil samples, or 3 duplicates for the 53 soil samples collected. As discussed in Section 6.0, SoundEarth collected equipment rinsate samples at a rate of one per day, or 2 percent of the total number of soil samples collected.

SoundEarth collected the following field duplicate soil samples and equipment rinsate water sample in connection with the field sampling activities completed on December 8, 2013:

- SoundEarth collected the following pairs of samples and field duplicate samples for potential laboratory analysis: JFOS2-BH04-12/JFOS2-BH04-12 (Duplicate), JFOS2-BH04-19/JFOS2-BH04-19 (Duplicate), and JFOS2-BH05-20/JFOS2-BH05-20 (Duplicate). Field duplicate samples were collected under conditions as identical as reasonably possible to the original sample, to the degree that soil sample homogeneity and recovery volumes allowed.
- SoundEarth collected one equipment rinsate sample following decontamination of the split-spoon sampler tooling following collection of soil sample JFOS2-BH04-32, by pouring laboratory-prepared de-ionized water across the tooling and containing the runoff in laboratory-prepared glassware.

The laboratory prepared one trip blank for the October 8, 2013, sampling event. PCBs were not detected in the trip blank. Trip blank quality is a measure of the potential for sources of sample cross-contamination originating from the laboratory.

3.0 LABORATORY ANALYSIS

Soil samples were analyzed for PCBs by EPA Method 8082A by Friedman & Bruya, Inc. (F&B) of Seattle, Washington, a Washington State- and EPA Contract Laboratory Program-accredited environmental laboratory. The scope of PCB analysis included the nine PCB Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, and 1268. In the calculation of total PCB concentrations, SoundEarth added together the detected values of individual Aroclors; if an Aroclor was not detected, then that undetected Aroclor was assigned a concentration of zero for summation purposes.

Dry weight and carbon-normalized PCB concentrations are presented in Table 2 and are included on each angle boring log in Appendix A. Laboratory reports are provided in Appendix B.

3.1 TIERED ANALYSIS

In accordance with the BODR, soil samples were selected for laboratory analysis in two tiers, beginning with the first five samples from each boring that were recovered below the approximate elevation of 1 foot MLLW. The BODR states that Tier 2 soil analyses will not be performed on samples where 4 consecutive feet of soil or bank materials contain PCB concentrations below 1 mg/kg dw. The 4-consecutive-feet criteria were met with the first tier of PCB analysis in angle boring JFOS2-BH01, but were not met in angle borings JFOS2-BH03, JFOS2-BH04, or JFOS2-BH05. Therefore, the four deepest samples collected from angle boring JFOS2-BH03, the two deepest samples collected from angle boring JFOS2-BH04, and the three deepest samples collected from angle boring JFOS2-BH05 were selected for second-tier PCB analysis by EPA Method 8082A.

3.2 CARBON-NORMALIZED DATA

In the November 15, 2013, meeting between EPA, JFC, and Boeing representatives, EPA required that the soil samples should also be analyzed for Total Organic Carbon (TOC) for comparison to Ecology Sediment Management Standards Sediment Quality Standard (SMS SQS) Chemical Criteria (Chapter 320 of the Washington Administrative Code 173-204) and coordination with the JFEAA bank removal action. On November 19, 2013, SoundEarth re-logged the soil samples that already had been analyzed for PCBs for TOC analysis by EPA Method 9060. F&B subcontracted the TOC analysis to Fremont Analytical (Fremont) of Seattle, Washington. Upon receipt of the TOC analytical results and at the request of JFC and Boeing, F&B calculated carbon-normalized PCB concentrations in accordance with Ecology Publication 05-09-050, Technical Information Memorandum: Organic Carbon Normalization of Sediment Data (Ecology 1992) and updated their report to include both dry weight and carbon-normalized values for total PCBs (Appendix B). SoundEarth further interpreted F&B's carbon-normalized PCB values in accordance with Ecology guidelines (Michelsen TC, Bragdon-Cook K. 1993). The results of dry weight and carbon-normalized values are summarized on the angle boring logs (Appendix A) and in Table 2 of this Data Report.

3.3 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

The focus of the Phase 4A investigation task was soil quality in the Underbank Area below approximate Elevation 0 feet MLLW. Of the three field duplicate samples collected in connection with the October 8, 2013, sampling event, only two were collected from sample elevations deeper than 0 feet MLLW and selected for PCB analysis along with its parent soil sample: JFOS2-BH04-19 (Duplicate) and JFOS2-BH04-20 (Duplicate). In each case, the PCB concentration was higher in the field duplicate sample than the parent sample. The higher of each pair of results is reported on its respective angle boring log and in Table 2. The higher of each pair of results also was used to calculate the carbon-normalized PCB concentration reported in Table 2.

SoundEarth collected one equipment rinsate blank in connection with Phase 4A (Rinsate Blank). The laboratory provided a trip blank for Phase 4A (Trip Blank). Both water samples were analyzed for nine PCB aroclors by EPA Method 8082A. PCBs were not detected in either sample. Rinsate blank quality is a measure of the potential for sample cross-contamination originating in the field, and the thoroughness of field equipment decontamination procedures. Trip blank quality is a measure of the potential for sources of sample cross-contamination originating from the laboratory.

4.0 DATA EVALUATION

The data evaluation task includes comparison of the soil analytical results with applicable regulatory levels, and classification of PCB-contaminated soils to support removal action design, followed by preparation of cross section graphics to illustrate the distribution of PCB-contaminated soils across the JFOS site.

4.1 COMPARISON WITH REGULATORY LEVELS

SoundEarth compared the PCB results with the TSCA limit of 50 mg/kg dw and the JFEAA removal action objective of 12 milligrams per kilogram organic carbon-normalized (mg/kg OC). Consistent with Phase 2 and Phase 3, which were completed under the First Modification (EPA 2012), SoundEarth also compared the PCB results to the MTCA Method A value of 1 mg/kg (AQEA and Farallon 2012a; AQEA and Floyd|Snider 2012). In Table 2, in the angle boring logs in Appendix A, and in Figures 4A, 4B, 5A, and 5B of this Data Report, the results of comparing the data to these values are color-coded as follows:

- PCB concentrations greater than 50 mg/kg dw are shaded red.
- PCB concentrations less than 50 mg/kg dw and greater than 1 mg/kg dw are shaded yellow.
- PCB concentrations less than or equal to 1 mg/kg dw are shaded green.

SoundEarth also compared the carbon-normalized PCB concentrations to the SMS SQS Chemical Criteria of 12 mg/kg OC; soil samples with TOC concentrations less than 0.5 percent and greater than 4 percent were not normalized (Michelsen TC, Bragdon-Cook K. 1993). In Table 2 and in the boring logs, carbon-

normalized PCB concentrations that exceed the SMS SQS Chemical Criteria of 12 mg/kg OC are shaded purple.

4.2 GRAPHICAL PRESENTATION

Figure 3 shows the alignments of the angle boring cross-sections which are presented on Figures 4A and 4B:

- **Figure 4A, Cross-Section A-A':** Angle boring JFOS2-BH01 barely penetrated the northeast corner of the Underbank Area; however, the 4-consecutive-feet criterion is met at this location. The data collected from this boring define the vertical and northwest extent of PCB concentrations above 1 mg/kg dw within 4 lateral feet of the boundary between the Underbank Area and Boeing's Southwest Bank Corrective Measure. Data collected from Phase 2 soil boring JF-DGP2 are included on Cross Section A-A' to illustrate the vertical and lateral distance between PCB-contaminated soils and the edge of the Underbank Area.
- **Figure 4A, Cross-Section B-B':** Angle boring JFOS2-BH03 penetrated the central portion of the Underbank Area and encountered PCB concentrations above 1 mg/kg dw as deep as elevation -8.0 feet MLLW. Data collected from Phase 2 soil boring JF-DGP1 are included on Cross Section B-B' to illustrate the vertical and lateral distance between PCB-contaminated soils beneath the upland portions of the JFOS and the edge of the Underbank Area.
- **Figure 4B, Cross-Section C-C':** Angle boring JFOS2-BH04 penetrated the southern portion of the Underbank Area and encountered PCB concentrations above 1 mg/kg dw as deep as elevation -11.4 feet MLLW. Data collected from Phase 1 soil boring T2B4 are included on Cross Section C-C' to illustrate the vertical and lateral distance between PCB-contaminated soils beneath the upland portions of the JFOS and the southern portion of the Underbank Area.
- **Figure 4B, Cross-Section D-D':** Angle boring JFOS2-BH05 penetrated the southern portion of the Underbank Area and encountered PCB concentrations above 1 mg/kg dw as deep as elevation -14.4 feet MLLW. Data collected from Phase 2 soil boring JF-DGP5 are included on Cross Section D-D' to illustrate the vertical and lateral distance between PCB-contaminated soils beneath the upland portions of the JFOS and the north end of the JFEAA bank removal action.

SoundEarth prepared two longer cross sections presenting all existing soil/bank material classifications in relation to the upland area, shoreward of the top-of-bank line, and extending into the Underbank Area:

- **Figure 5A, Cross-Section C°-C'':** Cross Section C°-C'' is oriented perpendicular to bank and intersects, from left to right (southwest to northeast), the southern end of the Boeing Southwest Bank Corrective Measure, the Underbank Area, the upland portions of the JFOS where PCB concentrations exceed 1 mg/kg dw and the 50 mg/kg dw TSCA limit, and the alignment of Boeing's existing sheet pile wall.

- **Figure 5B, Cross-Section E-E':** Cross Section E-E' is oriented parallel to the former outfall pipes and intersects, from left to right (west to east), the Underbank Area, and the upland portions of the JFOS where PCB concentrations exceed 1 mg/kg dw and the 50 mg/kg dw TSCA limit.

5.0 DATA VALIDATION

EPA's November 5, 2013, letter of condition approval stated that independent, third-party, Stage 2B data validation would be required for Phase 4A. Pyron Environmental, Inc. (Pyron) of Olympia, Washington performed Stage 2B data validation on F&B's laboratory report numbers 310151 and 310154. Pyron's assessment concluded that the PCB data are of known quality and acceptable for use as qualified, and the TOC data are acceptable for use. A summary of data affected by anomalies is provided in Table 1 of Pyron's data validation report, which is included in this Data Report as Appendix C.

F&B and Fremont summarized laboratory data qualifications on the Case Narrative page of each laboratory report. Analytical results were flagged accordingly in the event that data quality was affected (e.g. sample JFOS2-BH01-24; the surrogate associated with the analyte is out of control limits).

6.0 VARIANCE FROM PLAN

Upon review and evaluation of the data obtained in connection with Phase 4A investigation of the Underbank Area, SoundEarth identified the following variance from plan:

- EPA's September 18, 2013, verbal direction to follow the Phase 1 SAP/QAPP instead of the JFEAA SAP and QAPP altered the rate of collection of equipment rinsate blank samples; however, this information was not communicated to field personnel before field activities were completed on October 8, 2013. According to the Phase 1 SAP/QAPP, equipment rinsate blanks should have been collected at a rate of 5 percent of the number of solid samples, or at least 2 blanks for 53 soil samples collected. Instead, SoundEarth collected 1 equipment rinsate blank, at a rate of 1 blank per day. PCBs were not detected in the equipment rinsate blank sample; therefore, the decontamination protocols followed on October 8, 2013, appear to have been sufficient to meet the Phase 4A data quality objectives.

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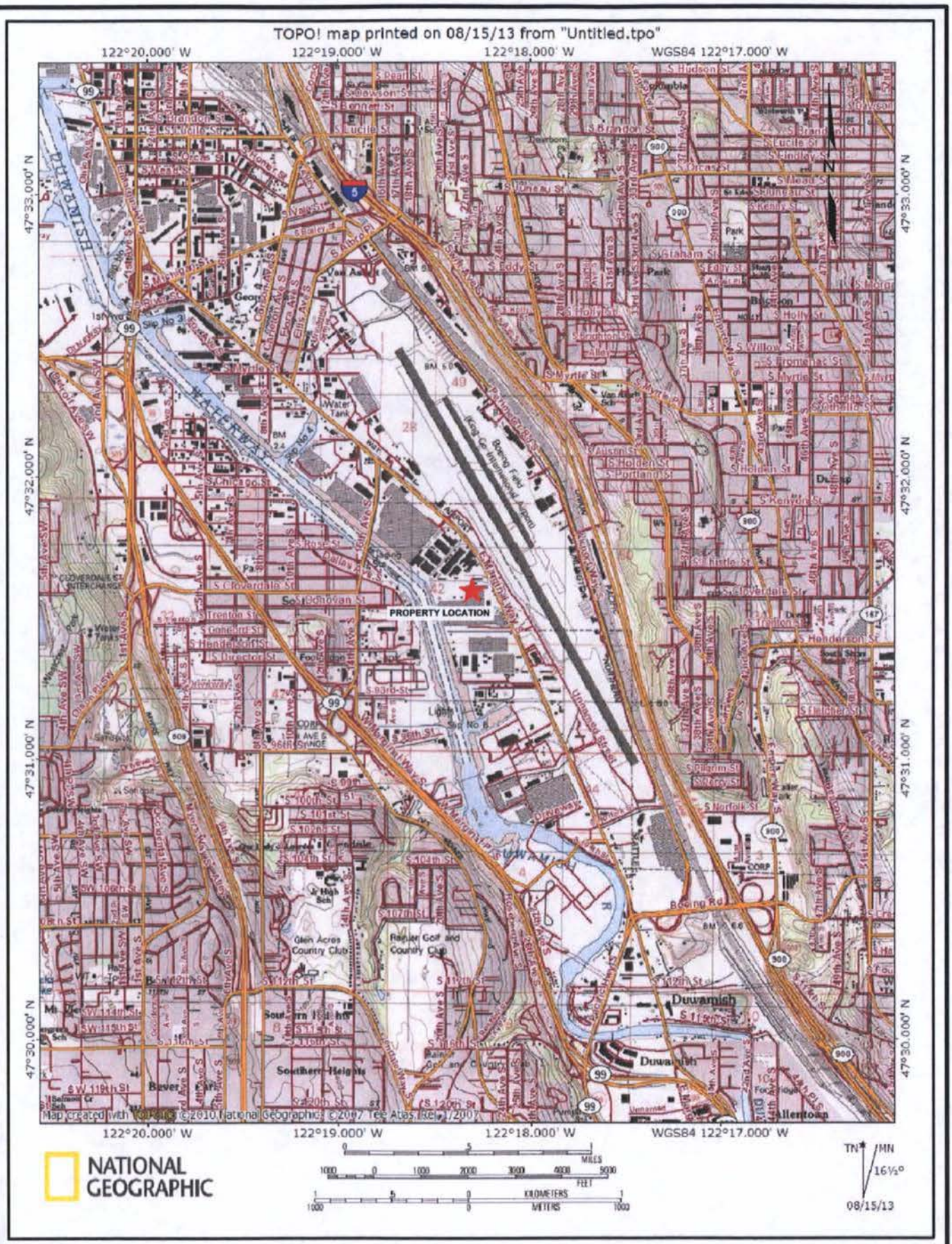
FIGURES



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PROJECT NAME: JORGENSEN FORGE PROPERTY
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FIGURE 1
PHYSIOGRAPHIC SETTING

P:\0995 JORGENSEN FORGE CORPORATION\TECHNICAL\CAD\PROPERTY LINE OUTFALL\0995-001-03_PL04A_F1_VIC.DWG

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REGION:

0 30 60 120 240
APPROXIMATE SCALE IN FEET

FIGURE 2
PROPERTY FEATURES MAP

11/7/2013
P:\0995 JORGENSEN FORGE CORPORATION\TECHNICAL\CAD\PROPERTY LINE OUTFALL\20131028 EPA SUBMITTAL\SI\0995-001-03_PL04A_F2_PROP.DWG
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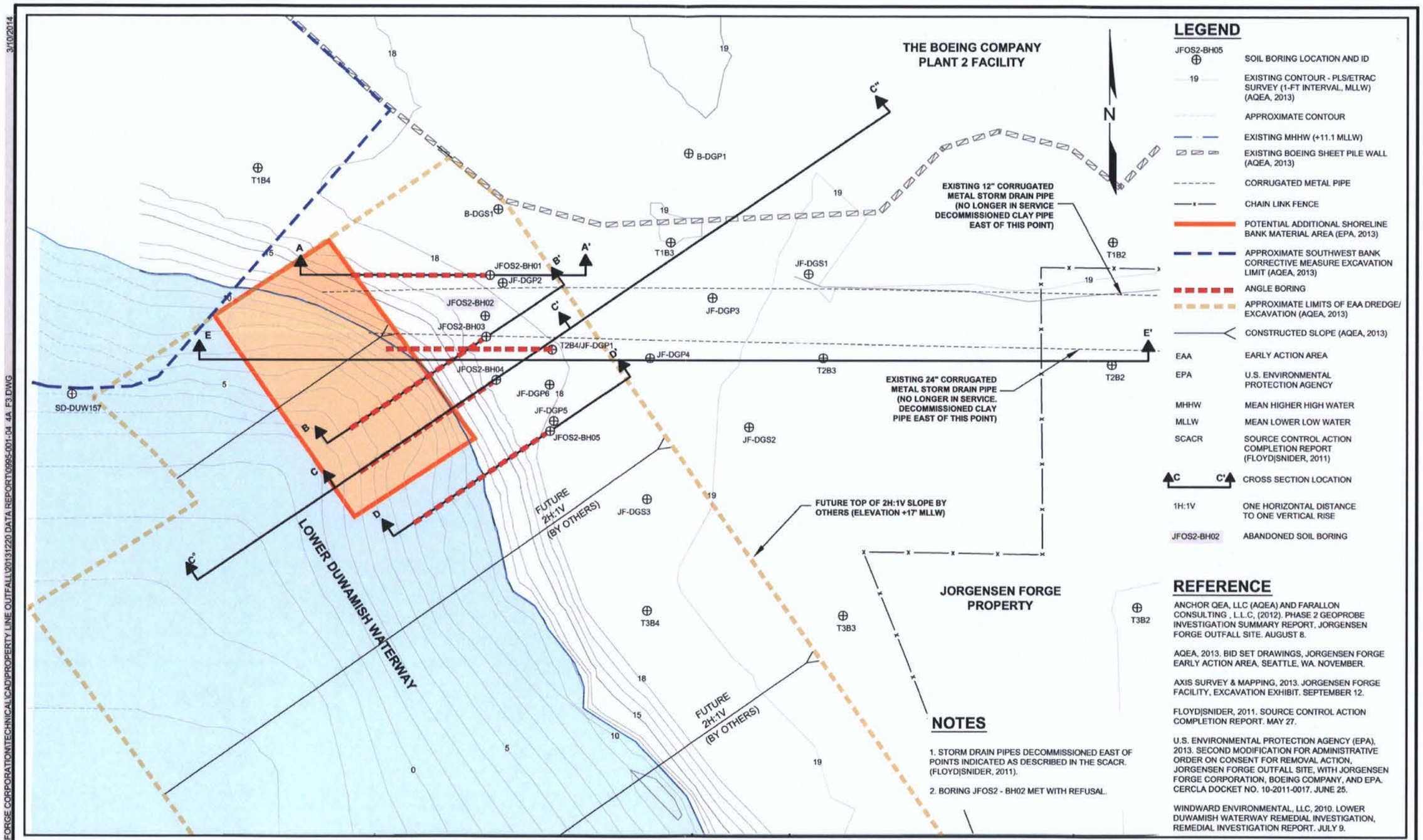

REFERENCE

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AQEA, 2013. BID SET DRAWINGS, JORGENSEN FORGE EARLY ACTION AREA, SEATTLE, WA. NOVEMBER.

AXIS SURVEY & MAPPING, 2013. JORGENSEN FORGE FACILITY, EXCAVATION EXHIBIT. SEPTEMBER 12.

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U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), 2013. SECOND MODIFICATION FOR ADMINISTRATIVE ORDER ON CONSENT FOR REMOVAL ACTION, JORGENSEN FORGE OUTFALL SITE, WITH JORGENSEN FORGE CORPORATION, BOEING COMPANY, AND EPA. CERCLA DOCKET NO. 10-2011-0017. JUNE 25.

WINDWARD ENVIRONMENTAL, LLC, 2010. LOWER DUWAMISH WATERWAY REMEDIAL INVESTIGATION, REMEDIAL INVESTIGATION REPORT. JULY 9.

NOTES

1. STORM DRAIN PIPES DECOMMISSIONED EAST OF POINTS INDICATED AS DESCRIBED IN THE SCACR. (FLOYD|SNIDER, 2011).

2. BORING JFOS2 - BH02 MET WITH REFUSAL.

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0 5 10 20
APPROXIMATE SCALE IN FEET

FIGURE 3
JORGENSEN FORGE OUTFALL SITE
PHASE 4A LAYOUT MAP

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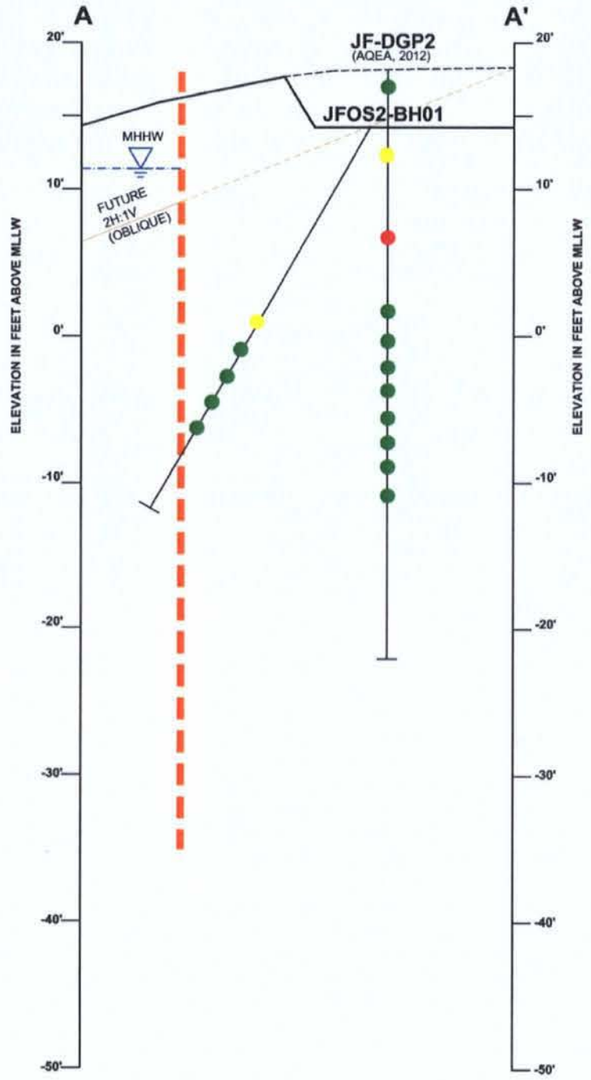

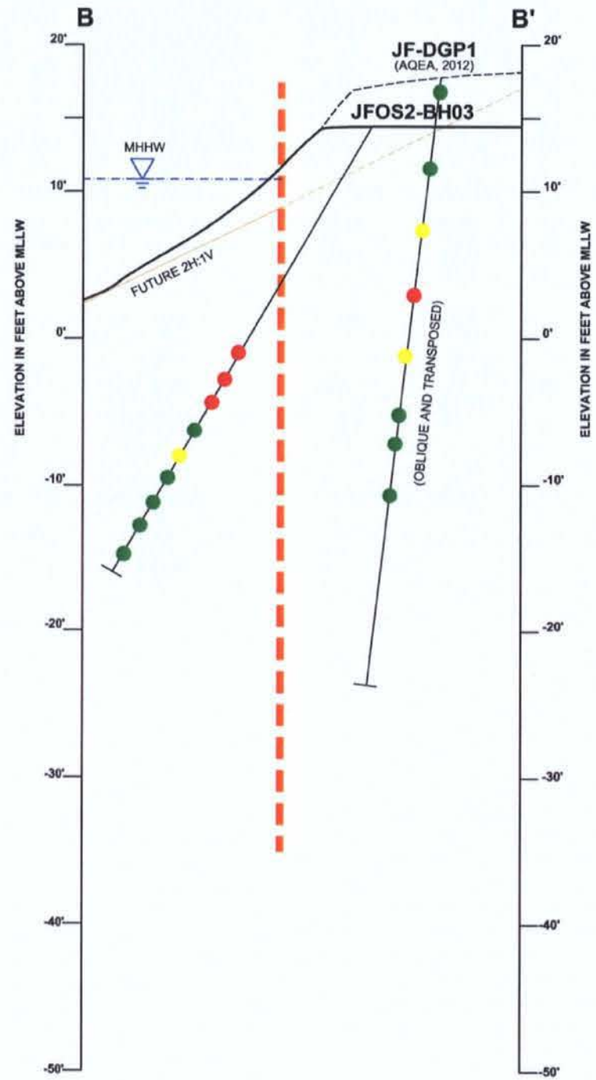

LEGEND

JFOS2-BH01	BORING ID
	FINAL DREDGE GRADE (APPROXIMATE) (AQEA, 2013)
	FUTURE 2H:1V SLOPE (AQEA, 2013)
	FORMER TOPOGRAPHY (AQEA, 2013)
	CURRENT TOPOGRAPHY (AXIS, 2013)
	EAST SIDE OF POTENTIAL ADDITIONAL SHORELINE BANK MATERIAL AREA (EPA, 2013)
	TOTAL PCB CONCENTRATION EXCEEDS 50 mg/kg dw
	TOTAL PCB CONCENTRATION IS BETWEEN 1 AND 50 mg/kg dw
	TOTAL PCB CONCENTRATION IS LESS THAN 1 mg/kg dw, OR NOT DETECTED
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY
mg/kg dw	MILLIGRAM PER KILOGRAM DRY WEIGHT
MHHW	MEAN HIGHER HIGH WATER (+11.1' MLLW)
MLLW	MEAN LOWER LOW WATER
PCB	POLYCHLORINATED BIPHENYL
TBD	TO BE DETERMINED

REFERENCES

ANCHOR QEA, LLC (AQEA) AND FARALLON CONSULTING L.L.C, 2012.PHASE 2 GEOPROBE INVESTIGATION SUMMARY REPORT, JORGENSEN FORGE OUTFALL SITE. AUGUST 8.

AQEA, 2013. BID SET DRAWINGS, JORGENSEN FORGE EARLY ACTION AREA, SEATTLE, WA. NOVEMBER.

AXIS SURVEY & MAPPING (AXIS), 2013. JORGENSEN FORGE FACILITY, EXCAVATION EXHIBIT. SEPTEMBER 12.

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), 2013. SECOND MODIFICATION TO ADMINISTRATIVE ORDER ON CONSENT FOR REMOVAL ACTION, JORGENSEN FORGE OUTFALL SITE, WITH JORGENSEN FORGE CORPORATION. THE BOEING COMPANY, AND EPA. CERCLA DOCKET NO. 10-2011-0017, JUNE 25.

NOTES

BORING JFOS2-BH02 MET WITH REFUSAL; THEREFORE NO LOG IS PROVIDED

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0 5 10 20
APPROXIMATE SCALE IN FEET

FIGURE 4A
ANGLE BORING
CROSS SECTIONS A - A' : B - B'

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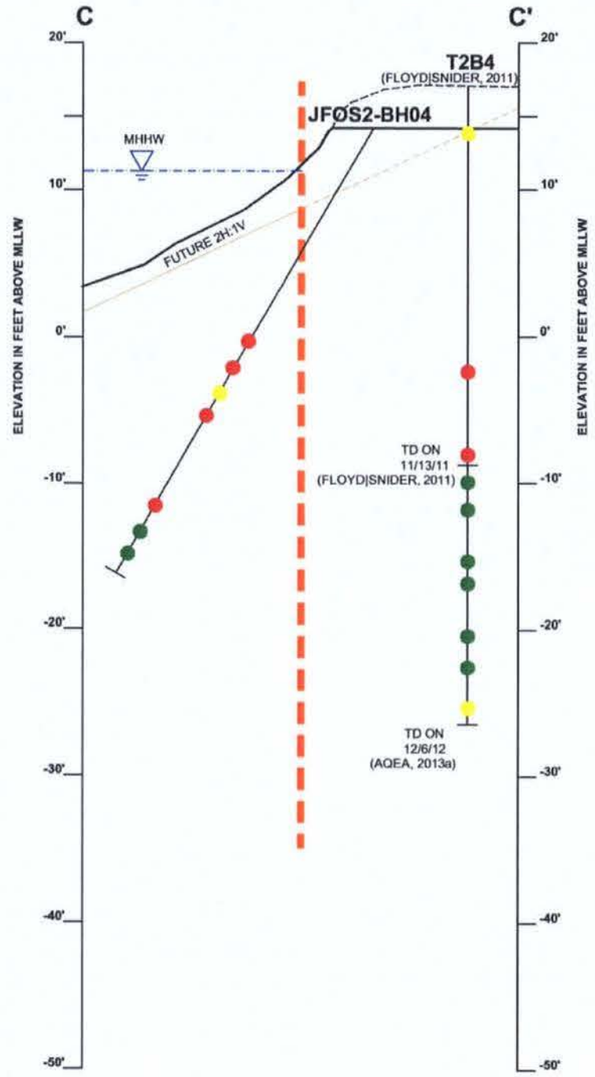

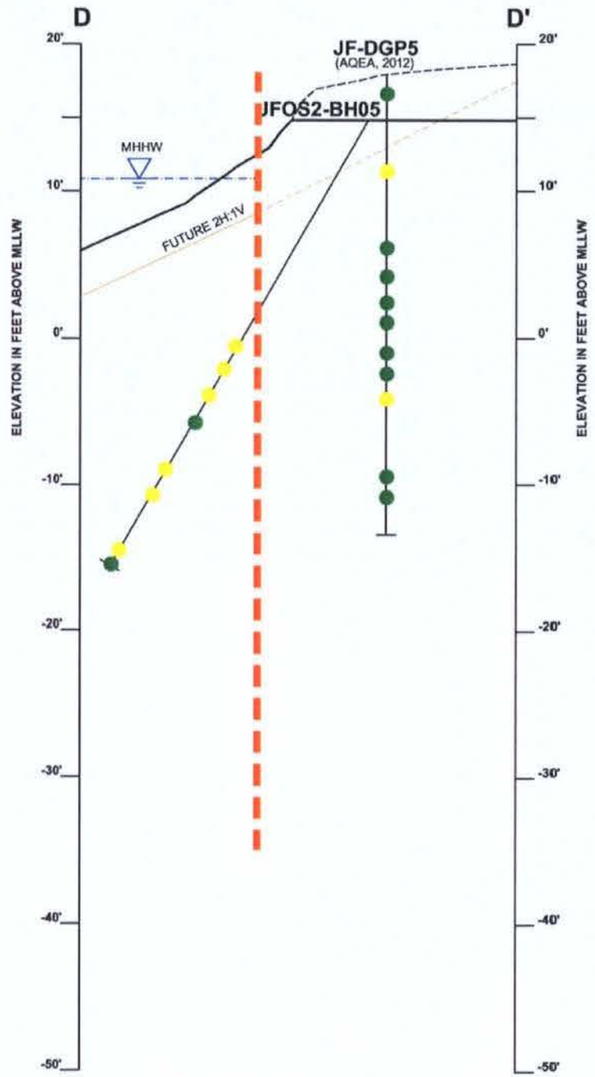

LEGEND

JFOS2-BH05	BORING ID
	FINAL DREDGE GRADE (APPROXIMATE) (AQEA, 2013)
	FUTURE 2H:1V SLOPE (AQEA, 2013)
	FORMER TOPOGRAPHY (AQEA, 2013)
	CURRENT TOPOGRAPHY (AXIS, 2013)
	EAST SIDE OF POTENTIAL ADDITIONAL SHORELINE BANK MATERIAL AREA (EPA, 2013)
	TOTAL PCB CONCENTRATION EXCEEDS 50 mg/kg dw
	TOTAL PCB CONCENTRATION IS BETWEEN 1 AND 50 mg/kg dw
	TOTAL PCB CONCENTRATION IS LESS THAN 1 mg/kg dw, OR NOT DETECTED
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY
mg/kg dw	MILLIGRAM PER KILOGRAM DRY WEIGHT
MHHW	MEAN HIGHER HIGH WATER (+11.1' MLLW)
MLLW	MEAN LOWER LOW WATER
PCB	POLYCHLORINATED BIPHENYL
TBD	TO BE DETERMINED
TD	TOTAL DEPTH

REFERENCES

ANCHOR QEA, LLC (AQEA) AND FARALLON CONSULTING L.L.C, 2012.PHASE 2 GEOPROBE INVESTIGATION SUMMARY REPORT, JORGENSEN FORGE OUTFALL SITE. AUGUST 8.

AQEA, 2013a. MEMORANDUM, RESULTS OF ADDITIONAL SOIL GEOPROBE VERTICAL CHARACTERIZATION AT THE JORGENSEN FORGE OUTFALL SITE. JANUARY 25.

AQEA, 2013b. BID SET DRAWINGS, JORGENSEN FORGE EARLY ACTION AREA, SEATTLE, WA. NOVEMBER.

AXIS SURVEY & MAPPING, 2013. JORGENSEN FORGE FACILITY, EXCAVATION EXHIBIT. SEPTEMBER 12.

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0 5 10 20
APPROXIMATE SCALE IN FEET

FIGURE 4B
ANGLE BORING
CROSS SECTIONS C - C' : D - D'

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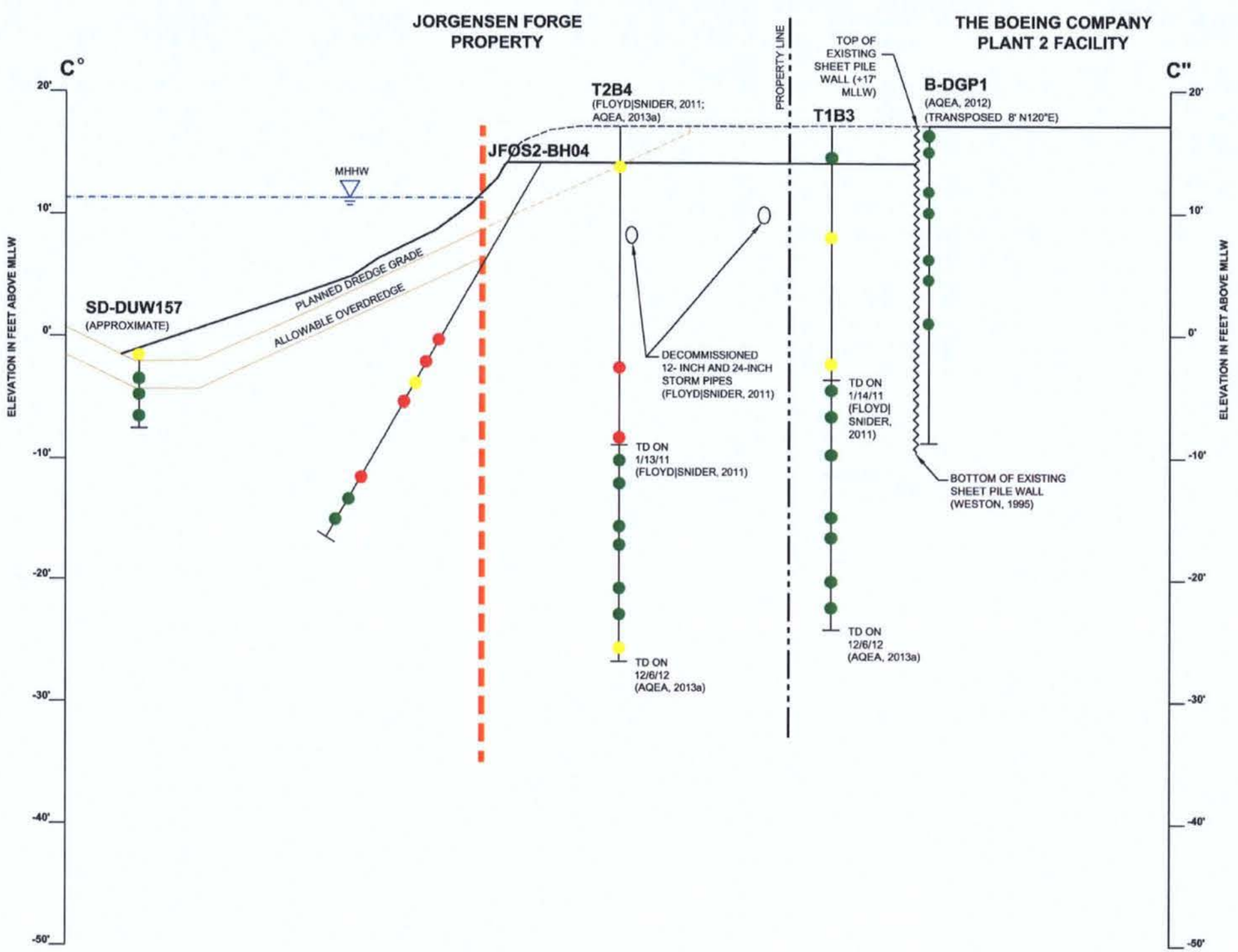

LEGEND

JFOS2-BH04	BORING ID
	PLANNED DREDGE GRADE (APPROXIMATE) (AQEA, 2013b)
	PLANNED 2H:1V SLOPE (AQEA, 2013b)
	FORMER TOPOGRAPHY (AQEA, 2013b)
	CURRENT TOPOGRAPHY (AXIS, 2013)
	EAST SIDE OF POTENTIAL ADDITIONAL SHORELINE BANK MATERIAL AREA (EPA, 2013)
	TOTAL PCB CONCENTRATION EXCEEDS 50 mg/kg dw
	TOTAL PCB CONCENTRATION IS BETWEEN 1 AND 50 mg/kg dw
	TOTAL PCB CONCENTRATION IS LESS THAN 1 mg/kg dw, OR NOT DETECTED
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY
mg/kg dw	MILLIGRAM PER KILOGRAM DRY WEIGHT
MHHW	MEAN HIGHER HIGH WATER (+11.1' MLLW)
MLLW	MEAN LOWER LOW WATER
PCB	POLYCHLORINATED BIPHENYL
TBD	TO BE DETERMINED
TD	TOTAL DEPTH

REFERENCES

ANCHOR QEA, LLC (AQEA) AND FARALLON CONSULTING L.L.C, 2012. PHASE 2 GEOPROBE INVESTIGATION SUMMARY REPORT, JORGENSEN FORGE OUTFALL SITE. AUGUST 8.

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0 5 10 20
APPROXIMATE SCALE IN FEET

FIGURE 5A
CROSS SECTION C° - C"

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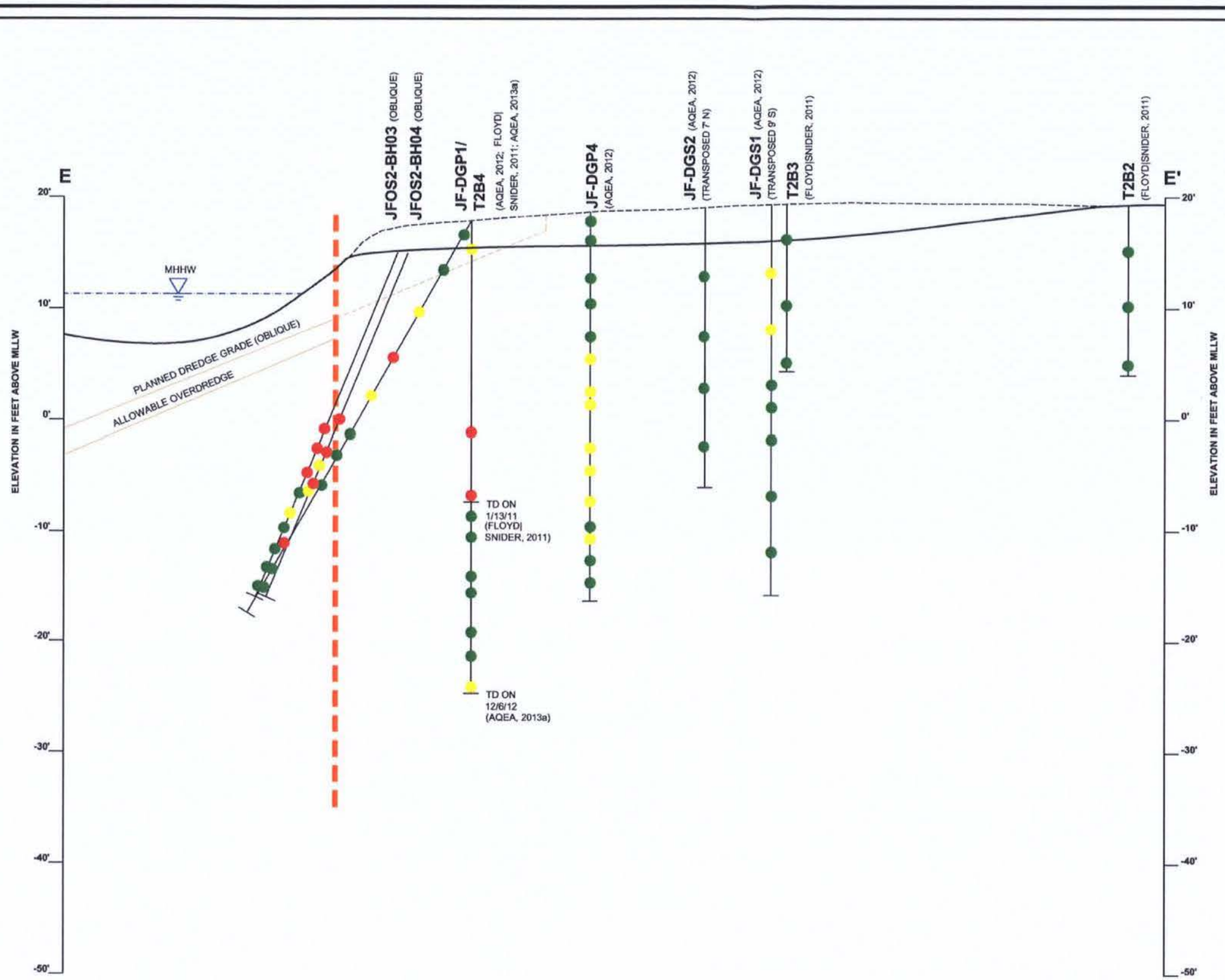

LEGEND

JFOS2-BH03	BORING ID
	FINAL DREDGE GRADE (APPROXIMATE) (AQEA, 2013b)
	FUTURE 2H:1V SLOPE (AQEA, 2013b)
	FORMER TOPOGRAPHY (AXIS, 2013b)
	CURRENT TOPOGRAPHY (AXIS, 2013)
	EAST SIDE OF POTENTIAL ADDITIONAL SHORELINE BANK MATERIAL AREA (EPA, 2013)
	TOTAL PCB CONCENTRATION EXCEEDS 50 mg/kg dw
	TOTAL PCB CONCENTRATION IS BETWEEN 1 AND 50 mg/kg dw
	TOTAL PCB CONCENTRATION IS LESS THAN 1 mg/kg dw, OR NOT DETECTED
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY
mg/kg dw	MILLIGRAM PER KILOGRAM DRY WEIGHT
MHHW	MEAN HIGHER HIGH WATER (+11.1' MLLW)
MLLW	MEAN LOWER LOW WATER
PCB	POLYCHLORINATED BIPHENYL
TBD	TO BE DETERMINED
TD	TOTAL DEPTH

REFERENCES

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0 5 10 20
APPROXIMATE SCALE IN FEET

FIGURE 5B
CROSS SECTION E - E'

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TABLES

SoundEarth Strategies

TABLE 1
SUMMARY OF COORDINATES FOR
ANGLE BORINGS AND SOIL SAMPLES
Jorgensen Forge Outfall Site
Second Modification, Phase 4A
Seattle, Washington
CERCLA Docket No. 10-2011-0017

BORING ID/ SAMPLE ID	BEARING	DRILLING ANGLE (DEGREES OFF VERTICAL)	APPROX. EASTING[1,2]	APPROX. NORTHING[1,2]	ELEVATION[3] (ft mllw)	GPS EASTING[4]	GPS NORTHING[4]
T2B4	NA	0°	1275795.3	195799.5	18	NA	NA
JFOS2-BH01	N 90° W	30°	1275789.1	195807.0	14.6	1275790	195808
JFOS2-BH02[(a)]	N 120° W	30°	1275788.6	195802.9	14.5	1275790	195805
JFOS2-BH03	N 120° W	30°	1275788.6	195800.7	14.5	1275791	195803
JFOS2-BH04	N 120° W	30°	1275789.6	195796.3	14.6	1275791	195795
JFOS2-BH05	N 120° W	30°	1275795.3	195791.0	15.0	1275797	195789

NOTES:

[1] North American Datum 1983, Washington State Plane Coordinate System, North Zone (feet)

[2] Axis Survey & Mapping, 2013. Jorgensen Forge Facility, Excavation Exhibit, September 12.

[3] Vertical Datum, Mean Lower Low Water (feet)

[4] GPS measurements recorded on November 11, 2013 using a Trimble® GeoXT™.

[(a)] Angle boring JFOS2-BHO2 met with refusal prematurely.

ABBREVIATIONS:

Approx. = approximate
ft = feet
GPS = global positioning system
MLLW = mean lower low water

SoundEarth Strategies

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS
JORGENSEN FORGE OUTFALL SITE
SECOND MODIFICATION, PHASE 4A
SEATTLE, WASHINGTON
CERCLE DOCKET NO. 10-2011-0017

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APPROX. ELEV. (feet MLLW)	ANGLE BORING ID JFOS2-BH01			ANGLE BORING ID JFOS2-BH03			ANGLE BORING ID JFOS2-BH04			ANGLE BORING ID JFOS2-BH05			APPROX. ELEV. (feet MLLW)
	SOIL SAMPLE ID	TOTAL PCBs[1] (mg/kg dw)	OC-NORMALIZED TOTAL PCBs (mg/kg OC)	SOIL SAMPLE ID	TOTAL PCBs[1] (mg/kg dw)	OC-NORMALIZED TOTAL PCBs (mg/kg OC)	SOIL SAMPLE ID	TOTAL PCBs[1] (mg/kg dw)	OC-NORMALIZED TOTAL PCBs (mg/kg OC)	SOIL SAMPLE ID	TOTAL PCBs[1] (mg/kg dw)	OC-NORMALIZED TOTAL PCBs (mg/kg OC)	
0.6	JFOS2-BH01-16	**15**	**2,300**	--	--	--	--	--	--	--	--	--	0.6
-0.2	--	--	--	--	--	--	JFOS2-BH04-17	**270**	**14,000**	--	--	--	-0.2
-1.1	JFOS2-BH01-18	<0.02	TOC <0.5% [a]	JFOS2-BH03-18	**280**	**11,000**	--	--	--	JFOS2-BH05-18	**2.7**	TOC >4% [a]	-1.1
-2.0	--	--	--	--	--	--	JFOS2-BH04-19 (Duplicate)	**160**	**10,000**	--	--	--	-2.0
-2.8	JFOS2-BH01-20	0.17	TOC <0.5% [a]	JFOS2-BH03-20	**560**	TOC >4% [a]	--	--	--	JFOS2-BH05-20 (Duplicate)	**11**	**300**	-2.8
-3.7	--	--	--	--	--	--	JFOS2-BH04-21	**34**	**3,800**	--	--	--	-3.7
-4.6	JFOS2-BH01-22	0.074	TOC <0.5% [a]	JFOS2-BH03-22	**110**	**3,300**	--	--	--	JFOS2-BH05-22	**2.9**	TOC >4% [a]	-4.6
-5.4	--	--	--	--	--	--	JFOS2-BH04-23	**140**	**6,000**	--	--	--	-5.4
-6.3	JFOS2-BH01-24	0.034 js	TOC <0.5% [a]	JFOS2-BH03-24	0.18	TOC <0.5% [a]	--	--	--	JFOS2-BH05-24	<0.02	TOC >4% [a]	-6.3
-7.2	--	--	--	--	--	--	--	--	--	--	--	--	-7.2
-8.0	JFOS2-BH01-26	NA	NA	JFOS2-BH03-26	**14**	TOC <0.5% [a]	--	--	--	--	--	--	-8.0
-8.9	--	--	--	--	--	--	--	--	--	--	--	--	-8.9
-9.7	JFOS2-BH01-28	NA	NA	JFOS2-BH03-28	0.43	TOC <0.5% [a]	--	--	--	JFOS2-BH05-28	**4.9**	**150**	-9.7
-10.6	--	--	--	--	--	--	--	--	--	--	--	--	-10.6
-11.5	JFOS2-BH01-30	NA	NA	JFOS2-BH03-30	0.055	TOC <0.5% [a]	JFOS2-BH04-30	**93**	**8,670**	JFOS2-BH05-30	**29**	**2,230**	-11.5
-12.3	--	--	--	--	--	--	--	--	--	--	--	--	-12.3
-13.2	--	--	--	JFOS2-BH03-32	<0.02	TOC <0.5% [a]	JFOS2-BH04-32	0.085	TOC <0.5% [a]	--	--	--	-13.2
-14.1	--	--	--	--	--	--	--	--	--	--	--	--	-14.1
-14.9	--	--	--	JFOS2-BH03-34	0.044	TOC <0.5% [a]	JFOS2-BH04-34	0.089	TOC <0.5% [a]	JFOS2-BH05-34	**2.0**	TOC <0.5% [a]	-14.9
-15.8	--	--	--	--	--	--	--	--	--	JFOS2-BH05-35	<0.1	TOC <0.5% [a]	-15.8

NOTES:

signifies total PCB concentration less than or equal to 1 mg/kg dw, or not detected
signifies total PCB concentration greater than 1 mg/kg dw
signifies total PCB concentration greater than the TSCA limit of 50 mg/kg dw
signifies OC-normalized PCB concentration exceeds the SMS SQS Chemical Criteria of 12 mg/kg OC

BOLD text signifies at least one PCB Aroclor was detected above its laboratory reporting limit
Laboratory analysis by Friedman & Bruya of Seattle, Washington
[1] PCBs by EPA Method 8082A
[a] Michelsen TC, Bragdon-Cook K. 1993. Technical information memorandum: Organic carbon normalization of sediment data. Washington Department of Ecology, Olympia, WA.

LABORATORY DATA QUALIFIERS:

js = The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

ABBREVIATIONS:

-- = sample not recovered from this depth interval
< = analyte not detected at or above the reporting limit
EPA = U.S. Environmental Protection Agency
ID = identification
mg/kg dw = milligrams per kilogram dry weight
mg/kg OC = milligrams per kilogram, organic-carbon normalized
MLLW = mean lower low water
NA = Not analyzed
OC = organic carbon
PCB = polychlorinated biphenyl
SMS = Sediment Management Standards, WAC 173-204
SQS = Sediment Quality Standards
TOC <0.5% = OC concentration less than 0.5 percent; normalization not appropriate
TOC >4% = OC concentration greater than 4 percent; normalization not appropriate
TSCA = Toxic Substances Control Act, 15 USC (C. 53) 2601-2692
USC = United States Code
WAC = Washington Adminstrative Code

APPENDIX A

ANGLE BORING LOGS

SoundEarth Strategies

BORING ID:
JFOS2-BHO1

GEOLOGIST:	C. CASS	**DRILLER:**	CASCADE DRILLING, L.P.	**LOCATION:**	*8'N, 6'W OF T2B4*
DATE STARTED:	10/8/2013	**EQUIPMENT:**	TRACK-MOUNTED GEOPROBE ®	**ELEVATION (FT MLLW):**	*14.6*
DATE COMPLETED:	10/8/2013	**MODEL:**	7730DT	**BEARING:**	*NORTH 90° WEST*
				VERTICAL ANGLE:	*30° OFF VERTICAL*

PUSH-PROBE ANGLE BORING	SAMPLE ROD INTERVAL (angled ft bgs)	SAMPLE COLLECTION INTERVAL (angled ft bgs)	%R	DEPTH OF DISCRETE SAMPLE (angled ft bgs)	APPROX. SAMPLE ELEV. (ft MLLW)	USCS CLASS	SOIL DESCRIPTION	TOTAL PCB CONC.[1] (mg/kg)	OC-NORMALIZED TOTAL PCBs (mg/kg OC)	SAMPLE ID
Boring advanced 30° from vertical	0-5	0-2	25	2	13	GP	Damp, medium dense, sandy GRAVEL with trace silt, brown, no odor (5-45-50).	NA	NA	JFOS2-BH01-02
		2-4	25	4	11	GP	Moist, medium dense, no odor (5-25-70).	NA	NA	JFOS2-BH01-04
	5-10	4-6	30	6	9	GP-GM	Wet, sandy GRAVEL with silt, brown, no odor (10-20-70).	NA	NA	JFOS2-BH01-06
		6-8	30	8	8	GP-GM	Wet to water-bearing, no odor (10-20-70).	NA	NA	JFOS2-BH01-08
		8-10	*0*	--	--	--	*No sample recovery.*	--	--	--
	10-15	10-12	100	12	4	GP-GM	Wet to waterbearing, sandy GRAVEL with silt, brown, no odor (40-20-20).	NA	NA	JFOS2-BH01-12
		12-14	100	14	2	GM	Silty, light brown, no odor (40-20-20).	NA	NA	JFOS2-BH01-14
	15-20	14-16	100	16	1	SM	Wet to waterbearing, medium dense, silty fine SAND with gravel, light brown, no odor, filmy texture (30-65-5).	15	2,300	JFOS2-BH01-16
		16-18	100	18	-1	SP-SM	Wet to waterbearing, medium dense, fine SAND with silt and trace gravel, dark brown, no odor (15-80-5).	<0.02	TOC <0.5% [a]	JFOS2-BH01-18
		18-20	100	20	-3	SP	Wet to waterbearing, medium dense, fine SAND with trace silt, dark brown, no odor (5-95-0).	0.17	TOC <0.5% [a]	JFOS2-BH01-20
	20-25	20-22	100	22	-4	SP	No odor (5-95-0).	0.074	TOC <0.5% [a]	JFOS2-BH01-22
		22-24	100	24	-6	SP	No odor, with wood debris @ 23' bgs (5-95-0).	0.034 js	TOC <0.5% [a]	JFOS2-BH01-24
	25-30	24-26	100	26	-8	SP	Fine to medium SAND with trace silt, dark brown, no odor (5-95-0).	NA	NA	JFOS2-BH01-26
		26-28	100	28	-10	SP	No odor (5-95-0).	NA	NA	JFOS2-BH01-28
		28-30	100	30	-11	SP	Finer sand, no odor (5-95-0).	NA	NA	JFOS2-BH01-30

Boring terminated at 30 angled feet (26 vertical feet), approximate Elevation -11.4 feet MLLW

NOTES:

signifies total PCB concentration less than or equal to 1 mg/kg, or not detected

signifies total PCB concentration greater than 1 mg/kg

signifies total PCB concentration greater than the TSCA limit of 50 mg/kg

signifies OC-normalized PCB concentration exceeds the SMS SQS Chemical Criteria of 12 mg/kg OC

Laboratory analysis by Friedman & Bruya of Seattle, Washington

[1] PCBS by EPA Method 8082A

[a] Michelsen TC, Bragdon-Cook K. 1993. Technical information memorandum: Organic carbon normalization of sediment data. Washington Department of Ecology, Olympia, WA.

LABORATORY DATA QUALIFIERS:

js = The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

ABBREVIATIONS:

(#-#-#) = Relative percent volume of silt, sand, and gravel as estimated by ASTM Method D2488 (Visual-Manual Method)

-- = no data or not applicable

%R = percent recovery, length of recovered core divided by distance sampler advanced

angled ft bgs = length in feet of drill stem below ground surface, advanced at an angle 30 degrees off vertical

ASTM = American Society of Testing and Materials

CONC. = concentration

ELEV. = elevation

EPA = U.S. Environmental Protection Act

mg/kg = milligrams per kilogram

MLLW = Mean Lower Low Water

NA = Not analyzed

PCB = polychlorinated biphenyls

TOC <0.5% = OC concentration less than 0.5 percent; normalization not appropriate

TOC >4% = OC concentration greater than 4 percent; normalization not appropriate

USCS = Unified Soil Classification System by ASTM-D2488 (Visual-Manual Method)

SoundEarth Strategies

BORING ID:
JFOS2-BHO3

GEOLOGIST:	C. CASS	**DRILLER:**	CASCADE DRILLING, L.P.	**LOCATION:**	*1'N, 7'W OF T2B4*
DATE STARTED:	10/8/2013	**EQUIPMENT:**	TRACK-MOUNTED GEOPROBE ®	**ELEVATION (FT MLLW):**	*14.5*
DATE COMPLETED:	10/8/2013	**MODEL:**	7730DT	**BEARING:**	*SOUTH 60° WEST*
				VERTICAL ANGLE:	*30° OFF VERTICAL*

PUSH-PROBE ANGLE BORING	SAMPLE ROD INTERVAL (angled ft bgs)	SAMPLE COLLECTION INTERVAL (angled ft bgs)	%R	DEPTH OF DISCRETE SAMPLE (angled ft bgs)	APPROX. SAMPLE ELEV. (ft MLLW)	USCS CLASS	SOIL DESCRIPTION	TOTAL PCB CONC.[1] (mg/kg)	OC-NORMALIZED TOTAL PCBs (mg/kg OC)	SAMPLE ID
Boring advanced 30° from vertical	0-5	0-2	80	3	12	SM	Damp, medium dense, silty fine SAND with trace gravel and roots, brown, no odor (40-55-5).	NA	NA	JFOS2-BH03-03
		2-4	*0*	--	--	--	*No recovery.*	--	--	--
		4-6	*0*	--	--	--	*No recovery.*	--	--	--
	5-10	6-8	70	7	8	GM	Wet, medium dense, sandy GRAVEL with silt, brown, no odor (10-30-60).	NA	NA	JFOS2-BH03-07
		8-10	*0*	--	--	--	*No recovery.*	--	--	--
	10-15	10-12	50	12	4	ML	6 inches: Wet to waterb'g, med. dense, sandy SILT, lt. br., no odor, filmy (60-40-0).	NA	NA	JFOS2-BH03-12
						GM	6 inches: Wet, med. dense, sandy GRAVEL with silt, brown, no sheen (10-40-50).			
		12-14	*0*	--	*NA*	--	*No recovery.*	--	--	--
		14-16	*0*	--	*NA*	--	*No recovery.*	--	--	--
	15-20	16-18	90	18	-1	GM	Wet to waterbearing, medium dense, sandy GRAVEL with silt, brown, no odor, sheen on soil (10-30-60).	280	11,000	JFOS2-BH03-18
		18-20	90	20	-3	SM	Wet to waterbearing, medium dense, silty fine SAND with trace gravel, gray, strong organic odor (40-55-5).	560	TOC >4% [a]	JFOS2-BH03-20
	20-25	20-22	100	22	-5	SM	With glass, and wood, gray, organic odor, sheen on soil (40-55-5).	110	3,300	JFOS2-BH03-22
		22-24	100	24	-6	SW	Wet to waterbearing, medium dense, SAND with silt, dark brown and slightly gray, no odor (5-95-0).	0.18	TOC <0.5% [a]	JFOS2-BH03-24
		24-26	100	26	-8	SP	Wet to waterbearing, medium dense, fine SAND with silt, brown, no odor, sheen on soil (5-95-0).	14	TOC <0.5% [a]	JFOS2-BH03-26
	25-30	26-28	100	28	-10	SP	Wet to waterbearing, medium dense, fine SAND with silt and trace wood, brown, no odor (5-95-0).	0.43	TOC <0.5% [a]	JFOS2-BH03-28
		28-30	100	30	-11	SP	Wet to waterbearing, medium dense, medium to coarse SAND with trace silt, dark brown, no odor, no sheen (5-95-0).	0.055	TOC <0.5% [a]	JFOS2-BH03-30
	30-35	30-32	100	32	-13	SP	Wet, medium dense, medium to coarse SAND with trace silt, black/dark brown, no odor (5-95-0).	<0.02	TOC <0.5% [a]	JFOS2-BH03-32
		32-34	100	34	-15	SP	Similar to previous (5-95-0).	0.044	TOC <0.5% [a]	JFOS2-BH03-34
		34-35	0		--	--	*No recovery.*	--	--	--

Boring terminated at 35 angled feet (30.3 vertical feet), approximate Elevation -15.8 feet MLLW

NOTES:
- green signifies total PCB concentration less than or equal to 1 mg/kg, or not detected
- yellow signifies total PCB concentration greater than 1 mg/kg
- red signifies total PCB concentration greater than the TSCA limit of 50 mg/kg
- purple signifies OC-normalized PCB concentration exceeds the SMS SQS Chemical Criteria of 12 mg/kg OC

Laboratory analysis by Friedman & Bruya of Seattle, Washington
[1]PCBS by EPA Method 8082A
[a] Michelsen TC, Bragdon-Cook K. 1993. Technical information memorandum: Organic carbon normalization of sediment data. Washington Department of Ecology, Olympia, WA.

ABBREVIATIONS:
(#-#-#) = Relative percent volume of silt, sand, and gravel as estimated by ASTM Method D2488 (Visual-Manual Method)
-- = no data or not applicable
%R = percent recovery, length of recovered core divided by distance sampler advanced
angled ft bgs = length in feet of drill stem below ground surface, advanced at an angle 30 degrees off vertical
ASTM = American Society of Testing and Materials
CONC. = concentration
ELEV. = elevation
EPA = U.S. Environmental Protection Act
mg/kg = milligrams per kilogram
MLLW = Mean Lower Low Water
NA = Not analyzed
PCB = polychlorinated biphenyls
TOC <0.5% = OC concentration less than 0.5 percent; normalization not appropriate
TOC >4% = OC concentration greater than 4 percent; normalization not appropriate
USCS = Unified Soil Classification System by ASTM-D2488 (Visual-Manual Method)

SoundEarth Strategies

BORING ID:
JFOS2-BHO4

GEOLOGIST:	C. CASS	**DRILLER:**	CASCADE DRILLING, L.P.
DATE STARTED:	10/8/2013	**EQUIPMENT:**	TRACK-MOUNTED GEOPROBE ®
DATE COMPLETED:	10/8/2013	**MODEL:**	7730DT

LOCATION:	*3'S, 6'W OF T2B4*
ELEVATION (FT MLLW):	*14.6*
BEARING:	*SOUTH 60° WEST*
VERTICAL ANGLE:	*30° OFF VERTICAL*

PUSH-PROBE ANGLE BORING	SAMPLE ROD INTERVAL (angled ft bgs)	SAMPLE COLLECTION INTERVAL (angled ft bgs)	%R	DEPTH OF DISCRETE SAMPLE (angled ft bgs)	APPROX. SAMPLE ELEV. (ft MLLW)	USCS CLASS	SOIL DESCRIPTION	TOTAL PCB CONC.[1] (mg/kg)	OC-NORMALIZED TOTAL PCBs (mg/kg OC)	SAMPLE ID
Boring advanced 30° from vertical	0-5	0-2	40	2	13	GM	Damp, medium dense, sandy GRAVEL with silt, brown, no odor (10-40-50).	NA	NA	JFOS2-BH04-02
		2-4	*0*	--	--	--	*No recovery.*	--	--	--
		4-6	*0*	--	--	--	*No recovery.*	--	--	--
	5-10	6-8	100	7	9	GM	Wet, medium dense, sandy GRAVEL with silt, brown, no odor (10-30-60).	NA	NA	JFOS2-BH04-07
		8-10	*0*	--	--	--	*No recovery.*	--	--	--
	10-15	10-12	60	12	4	GM	Wet to waterbearing, medium dense, sandy GRAVEL with silt, light brown, no odor (10-30-60).	NA	NA	JFOS2-BH04-12
		12-14	*0*	--	--	--	*No recovery.*	--	--	--
		14-16	*0*	--	--	--	*No recovery.*	--	--	--
	15-20	16-18	90	17	0	GM	Wet to waterbearing, medium dense, sandy GRAVEL with silt, light brown, no odor (10-40-50).	270	14,000	JFOS2-BH04-17
		18-20	90	19	-2	GM	Similar to previous, filmy texture (10-40-50).	180	10,000	JFOS2-BH04-19 (Duplicate)
	20-25	20-22	100	21	-4	GM	Similar to previous, filmy texture, slight sheen on soil (10-40-50).	34	3,800	JFOS2-BH04-21
		22-24	100	23	-5	GM	With silt, glass, and concrete debris, gray, no odor, filmy texture (10-40-50).	140	6,000	JFOS2-BH04-23
	25-30	*24-26*	*0*	--	--	--	*No recovery.*	--	--	--
		26-28	*0*	--	--	--	*No recovery.*	--	--	--
		28-30	100	30	-11	SM	Wet to waterbearing, medium dense, silty SAND with some gravel, gray, hydrocarbon odor, filmy texture, sheen on soil (40-60-10).	93	8,670	JFOS2-BH04-30
	30-35	30-32	100	32	-13	SW	Wet to waterbearing, medium dense, fine to medium SAND with trace silt, black-gray, no odor (5-95-0).	0.085	TOC <0.5% [a]	JFOS2-BH04-32
		32-34	100	34	-15	SW/ML	With 3-inch thick silt lenses (5-95-0).	0.089	TOC <0.5% [a]	JFOS2-BH04-34
		34-35	*0*	--	--	--	*No recovery.*	--	--	--

Boring terminated at 35 angled feet (30.3 vertical feet), approximate Elevation -15.7 feet MLLW

NOTES:
- signifies total PCB concentration less than or equal to 1 mg/kg, or not detected
- signifies total PCB concentration greater than 1 mg/kg
- signifies total PCB concentration greater than the TSCA limit of 50 mg/kg
- signifies OC-normalized PCB concentration exceeds the SMS SQS Chemical Criteria of 12 mg/kg OC

Laboratory analysis by Friedman & Bruya of Seattle, Washington
[1]PCBS by EPA Method 8082A
[a] Michelsen TC, Bragdon-Cook K. 1993. Technical information memorandum: Organic carbon normalization of sediment data. Washington Department of Ecology, Olympia, WA.

ABBREVIATIONS:
(#-#-#) = Relative percent volume of silt, sand, and gravel as estimated by ASTM Method D2488 (Visual-Manual Method)
-- = no data or not applicable
%R = percent recovery, length of recovered core divided by distance sampler advanced
angled ft bgs = length in feet of drill stem below ground surface, advanced at an angle 30 degrees off vertical
ASTM = American Society of Testing and Materials
CONC. = concentration
ELEV. = elevation
EPA = U.S. Environmental Protection Act
mg/kg = milligrams per kilogram
MLLW = Mean Lower Low Water
NA = Not analyzed
PCB = polychlorinated biphenyls
TOC <0.5% = OC concentration less than 0.5 percent; normalization not appropriate
TOC >4% = OC concentration greater than 4 percent; normalization not appropriate
USCS = Unified Soil Classification System by ASTM-D2488 (Visual-Manual Method)

SoundEarth Strategies

BORING ID:
JFOS2-BHO5

GEOLOGIST:	C. CASS	**DRILLER:**	CASCADE DRILLING, L.P.	**LOCATION:**	*8.5'S, 0'W OF T2B4*
DATE STARTED:	10/8/2013	**EQUIPMENT:**	TRACK-MOUNTED GEOPROBE ®	**ELEVATION (FT MLLW):**	*15.0*
DATE COMPLETED:	10/8/2013	**MODEL:**	7730DT	**BEARING:**	*SOUTH 60° WEST*
				VERTICAL ANGLE:	*30° OFF VERTICAL*

PUSH-PROBE ANGLE BORING	SAMPLE ROD INTERVAL (angled ft bgs)	SAMPLE COLLECTION INTERVAL (angled ft bgs)	%R	DEPTH OF DISCRETE SAMPLE (angled ft bgs)	APPROX. SAMPLE ELEV. (ft MLLW)	USCS CLASS	SOIL DESCRIPTION	TOTAL PCB CONC.[1] (mg/kg)	OC-NORMALIZED TOTAL PCBs (mg/kg OC)	SAMPLE ID
Boring advanced 30° from vertical	0-5	0-2	40	2	13	GM	Damp, medium dense, sandy GRAVEL with silt, brown, no odor (20-30-50).	NA	NA	JFOS2-BH05-02
		2-4	*0*	*NA*	--	--	*No sample recovery.*	--	--	--
		4-6	10	*NA*	--	--	*Insufficient sample recovery.*	--	--	--
	5-10	6-8	20	7	9	GM	Wet to waterbearing, medium dense, sandy GRAVEL with silt, light brown, no odor (20-30-50).	NA	NA	JFOS2-BH05-07
		8-10	*0*	*NA*	--	--	*No sample recovery.*	--	--	--
	10-15	10-12	60	12	5	GM	Wet to waterbearing, medium dense, sandy GRAVEL with silt, brown-light brown, no odor (10-40-50).	NA	NA	JFOS2-BH05-12
		12-14	60	14	3	GM	Similar to previous, gray, with asphalt, slight filmy texture (10-40-50).	NA	NA	JFOS2-BH05-14
		14-16	*0*	*NA*	--	--	*No sample recovery.*	--	--	--
	15-20	16-18	100	18	-1	GM	Wet to waterbearing, medium dense, sandy GRAVEL with silt, dark brown, no odor (10-40-50).	2.7	TOC >4% [a]	JFOS2-BH05-18
		18-20	100	20	-2	GM	Similar to previous, light brown, filmy texture (10-40-50).	11	300	JFOS2-BH05-20 (Duplicate)
	20-25	20-22	100	22	-4	GM	Wet to waterbearing, medium dense, sandy GRAVEL with silt, light brown, no odor (10-40-50).	2.9	TOC >4% [a]	JFOS2-BH05-22
		22-24	100	24	-6	SM	Wet to waterbearing, medium dense, silty, fine to medium SAND with gravel, gray, organic odor (30-40-30).	<0.07	TOC >4% [a]	JFOS2-BH05-24
		24-26	*0*	*NA*	--	--	*No sample recovery.*	--	--	--
	25-30	26-28	100	28	-9	GM	Wet to waterbearing, medium dense, sandy GRAVEL with silt, brown-gray, no odor (10-40-50).	4.9	150	JFOS2-BH05-28
		28-30	100	30	-11	SW / ML	Interbedded (3 to 6 inch thick) SAND and SILT, with abundant glass, gray, filmy texture (5-95-0) / (95-5-0).	29	2,230	JFOS2-BH05-30
	30-35	*30-32*	*0*	*NA*	--	--	*No sample recovery.*	--	--	--
		32-34	100	34	-14	SM	Wet to waterbearing, medium dense, silty fine SAND with gravel, dark brown, no odor, filmy texture from 33.5 to 34-foot interval (30-60-10).	2.0	TOC <0.5% [a]	JFOS2-BH05-34
		34-35	100	35	-15	SM	Similar to previous, porcelain shards, no filmy texture (30-60-10).	<0.1	TOC <0.5% [a]	JFOS2-BH05-35

Boring terminated at 35 angled feet (30.3 vertical feet), approximate Elevation -15.3 feet MLLW

NOTES:
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MLLW = Mean Lower Low Water
NA = Not analyzed
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TOC <0.5% = OC concentration less than 0.5 percent; normalization not appropriate
TOC >4% = OC concentration greater than 4 percent; normalization not appropriate
USCS = Unified Soil Classification System by ASTM-D2488 (Visual-Manual Method)

APPENDIX B

LABORATORY REPORTS

Friedman & Bruya, Inc. Report No. 310151

Friedman & Bruya, Inc. Report No. 310154

Friedman & Bruya, Inc. Report No. 310154 (additional)

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
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3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

October 31, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the results from the testing of material submitted on October 9, 2013 from the SOU_0995-001-04_20131009, F&BI 310151 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
SOU1031R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 9, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies SOU_0995-001-04_20131009, F&BI 310151 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	SoundEarth Strategies
310151 -01	Rinsate Blank

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Rinsate Blank	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009
Date Extracted:	10/09/13	Lab ID:	310151-01
Date Analyzed:	10/18/13	Data File:	86.D\ECD1A.C
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	KJ

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	111	50	150

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	SoundEarth Strategies
Date Received:	Not Applicable	Project:	SOU_0995-001-04_20131009
Date Extracted:	10/09/13	Lab ID:	mb3 2028 fl
Date Analyzed:	10/18/13	Data File:	101790.D\ECD1A.CH
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	KJ

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	98	50	150

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Date of Report: 10/31/13
Date Received: 10/09/13
Project: SOU_0995-001-04_20131009, F&BI 310151

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.63	96	112	70-130	15
Aroclor 1260	ug/L (ppb)	0.63	92	100	70-130	8

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

310151

SAMPLE CHAIN OF CUSTODY ME 10-09-13

AI6

Page # 1 of 1

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS *(signature)* Chris Cass

PROJECT NAME/NO.: Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)

PO #: 0995-001-04

REMARKS

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082								Notes
Rinsate Blank	—	—	01	10-8-13	15:30	water	1	X								

Samples received at 5 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Chris Cass	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by: Nhan Phan	Nhan Phan	FedEx	10/9/13	0917
Relinquished by:				
Received by:				

FORMS\COC.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 26, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the amended results from the testing of material submitted on October 9, 2013 from the SOU_0995-001-04_20131009, F&BI 310154 project. Per your request, the results have had been organic carbon normalized following the guidelines set forth in the Washington Department of Ecology publication 05-09-050 dated December 1992.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Sheri Bozic
SOU1028R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

October 28, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the results from the testing of material submitted on October 9, 2013 from the SOU_0995-001-04_20131009, F&BI 310154 project. There are 47 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Sheri Bozic
SOU1028R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 9, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies SOU_0995-001-04_20131009, F&BI 310154 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	SoundEarth Strategies
310154-01	JFOS2-BH01-02
310154-02	JFOS2-BH01-04
310154-03	JFOS2-BH01-06
310154-04	JFOS2-BH01-08
310154-05	JFOS2-BH01-12
310154-06	JFOS2-BH01-14
310154-07	JFOS2-BH01-16
310154-08	JFOS2-BH01-18
310154-09	JFOS2-BH01-20
310154-10	JFOS2-BH01-22
310154-11	JFOS2-BH01-24
310154-12	JFOS2-BH01-26
310154-13	JFOS2-BH01-28
310154-14	JFOS2-BH01-30
310154-15	JFOS2-BH02-02
310154-16	JFOS2-BH02-07
310154-17	JFOS2-BH02-12
310154-18	JFOS2-BH02-16
310154-19	JFOS02-BH03-03
310154-20	JFOS02-BH02-10
310154-21	JFOS2-BH03-07
310154-22	JFOS2-BH03-12
310154-23	JFOS2-BH03-18
310154-24	JFOS2-BH03-20
310154-25	JFOS2-BH03-22
310154-26	JFOS2-BH03-24
310154-27	JFOS2-BH03-26
310154-28	JFOS2-BH03-28
310154-29	JFOS2-BH03-30
310154-30	JFOS2-BH03-32
310154-31	JFOS2-BH03-34
310154-32	JFOS2-BH04-02
310154-33	JFOS2-BH04-07
310154-34	JFOS2-BH04-12
310154-35	JFOS2-BH04-12 (Duplicate)
310154-36	JFOS2-BH04-17
310154-37	JFOS2-BH04-19

CASE NARRATIVE (continued)

310154-38	JFOS2-BH04-19 (Duplicate)
310154-39	JFOS2-BH04-21
310154-40	JFOS2-BH04-23
310154-41	JFOS2-BH04-30
310154-42	JFOS2-BH04-32
310154-43	JFOS2-BH04-34
310154-44	JFOS2-BH05-02
310154-45	JFOS2-BH05-07
310154-46	JFOS2-BH05-12
310154-47	JFOS2-BH05-14
310154-48	JFOS2-BH05-18
310154-49	JFOS2-BH05-20
310154-50	JFOS2-BH05-20 (Duplicate)
310154-51	JFOS2-BH05-22
310154-52	JFOS2-BH05-24
310154-53	JFOS2-BH05-28
310154-54	JFOS2-BH05-30
310154-55	JFOS2-BH05-34
310154-56	JFOS2-BH05-35
310154-57	Trip Blank

The 8082A surrogate in samples JFOS2-BH01-24 and JFOS2-BH05-18 did not pass the acceptance criteria. The sample results were flagged accordingly.

The 8082A matrix spike and matrix spike duplicate failed the relative percent difference for aroclor 1260. The results are likely due to sample interferences.

All other quality control requirements were acceptable.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH01-16	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-07 1/5
Date Analyzed:	10/11/13	Data File:	32.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	110	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	<3.1
Aroclor 1232	<0.02	<3.1
Aroclor 1016	<0.02	<3.1
Aroclor 1242	<0.02	<3.1
Aroclor 1248	<0.02	<3.1
Aroclor 1254	17 ve	2,600 ve
Aroclor 1260	<0.02	<3.1
Aroclor 1262	<0.02	<3.1
Aroclor 1268	<0.02	<3.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH01-16	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-07 1/100
Date Analyzed:	10/15/13	Data File:	28.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	110 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.4	<62
Aroclor 1232	<0.4	<62
Aroclor 1016	<0.4	<62
Aroclor 1242	<0.4	<62
Aroclor 1248	<0.4	<62
Aroclor 1254	15	2,300
Aroclor 1260	<0.4	<62
Aroclor 1262	<0.4	<62
Aroclor 1268	<0.4	<62

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH01-18	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-08 1/5
Date Analyzed:	10/15/13	Data File:	40.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	95	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	<0.02	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note: The presence of PCB congeners cannot be ruled out, but the material present is not characteristic of the standard aroclors.

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH01-20	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-09 1/5
Date Analyzed:	10/11/13	Data File:	40.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	84	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	0.17	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH01-22	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-10 1/5
Date Analyzed:	10/11/13	Data File:	42.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	141	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	0.074	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH01-24	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-11 1/5
Date Analyzed:	10/12/13	Data File:	44.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	171 vo	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	0.034 js	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-18	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-23 1/1000
Date Analyzed:	10/15/13	Data File:	30.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	200 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<4	<150
Aroclor 1232	<4	<150
Aroclor 1016	<4	<150
Aroclor 1242	<4	<150
Aroclor 1248	<4	<150
Aroclor 1254	280	11,000
Aroclor 1260	<4	<150
Aroclor 1262	<4	<150
Aroclor 1268	<4	<150

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-20	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-24 1/1000
Date Analyzed:	10/16/13	Data File:	64.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	100 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<4	<50
Aroclor 1232	<4	<50
Aroclor 1016	<4	<50
Aroclor 1242	<4	<50
Aroclor 1248	<4	<50
Aroclor 1254	380	4,800
Aroclor 1260	180	2,300
Aroclor 1262	<4	<50
Aroclor 1268	<4	<50

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-22	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-25 1/1000
Date Analyzed:	10/16/13	Data File:	62.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	100 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<4	<120
Aroclor 1232	<4	<120
Aroclor 1016	<4	<120
Aroclor 1242	<4	<120
Aroclor 1248	<4	<120
Aroclor 1254	<4	<120
Aroclor 1260	110	3,300
Aroclor 1262	<4	<120
Aroclor 1268	<4	<120

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-24	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-26 1/5
Date Analyzed:	10/15/13	Data File:	42.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	111	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	0.18	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-26	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-27 1/5
Date Analyzed:	10/12/13	Data File:	50.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	100	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	<14
Aroclor 1232	<0.02	<14
Aroclor 1016	<0.02	<14
Aroclor 1242	<0.02	<14
Aroclor 1248	<0.02	<14
Aroclor 1254	<0.02	<14
Aroclor 1260	13 ve	9,200 ve
Aroclor 1262	<0.02	<14
Aroclor 1268	<0.02	<14

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-26	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-27 1/100
Date Analyzed:	10/15/13	Data File:	32.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	110 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.4	<280
Aroclor 1232	<0.4	<280
Aroclor 1016	<0.4	<280
Aroclor 1242	<0.4	<280
Aroclor 1248	<0.4	<280
Aroclor 1254	<0.4	<280
Aroclor 1260	14	9,900
Aroclor 1262	<0.4	<280
Aroclor 1268	<0.4	<280

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-28	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-28 1/5
Date Analyzed:	10/23/13	Data File:	28.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	94	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	<0.02	NA
Aroclor 1260	0.43	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-30	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-29 1/5
Date Analyzed:	10/23/13	Data File:	30.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	101	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	0.055	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-32	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-30 1/5
Date Analyzed:	10/23/13	Data File:	32.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	112	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	<0.02	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH03-34	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-31 1/5
Date Analyzed:	10/23/13	Data File:	34.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	90	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	0.044	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH04-17	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-36 1/1000
Date Analyzed:	10/16/13	Data File:	56.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	100 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<4	<200
Aroclor 1232	<4	<200
Aroclor 1016	<4	<200
Aroclor 1242	<4	<200
Aroclor 1248	<4	<200
Aroclor 1254	270	14,000
Aroclor 1260	<4	<200
Aroclor 1262	<4	<200
Aroclor 1268	<4	<200

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH04-19	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-37 1/1000
Date Analyzed:	10/16/13	Data File:	58.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	100 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<4	<210
Aroclor 1232	<4	<210
Aroclor 1016	<4	<210
Aroclor 1242	<4	<210
Aroclor 1248	<4	<210
Aroclor 1254	82	4,400
Aroclor 1260	<4	<210
Aroclor 1262	<4	<210
Aroclor 1268	<4	<210

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH04-19 (Duplicate)	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-38 1/1000
Date Analyzed:	10/16/13	Data File:	60.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	100 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<4	<260
Aroclor 1232	<4	<260
Aroclor 1016	<4	<260
Aroclor 1242	<4	<260
Aroclor 1248	<4	<260
Aroclor 1254	160	10,000
Aroclor 1260	<4	<260
Aroclor 1262	<4	<260
Aroclor 1268	<4	<260

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH04-21	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-39 1/500
Date Analyzed:	10/16/13	Data File:	54.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	100 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<2	<230
Aroclor 1232	<2	<230
Aroclor 1016	<2	<230
Aroclor 1242	<2	<230
Aroclor 1248	<2	<230
Aroclor 1254	34	3,800
Aroclor 1260	<2	<230
Aroclor 1262	<2	<230
Aroclor 1268	<2	<230

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH04-23	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-40 1/2500
Date Analyzed:	10/16/13	Data File:	66.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	250 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<10	<430
Aroclor 1232	<10	<430
Aroclor 1016	<10	<430
Aroclor 1242	<10	<430
Aroclor 1248	<10	<430
Aroclor 1254	140	6,000
Aroclor 1260	<10	<430
Aroclor 1262	<10	<430
Aroclor 1268	<10	<430

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH04-30	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-41 1/100
Date Analyzed:	10/16/13	Data File:	52.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	110 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.4	<37
Aroclor 1232	<0.4	<37
Aroclor 1016	19	1,800
Aroclor 1242	25	2,300
Aroclor 1248	<0.4	<37
Aroclor 1254	31	2,900
Aroclor 1260	14	1,300
Aroclor 1262	4.0	370
Aroclor 1268	<0.4	<37

Note: Due to interferences present Aroclors 1016 and/or 1242, and 1260 and/or 1262 should be considered estimates.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH04-32	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-42 1/5
Date Analyzed:	10/23/13	Data File:	36.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	99	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	NA
Aroclor 1232	<0.02	NA
Aroclor 1016	<0.02	NA
Aroclor 1242	<0.02	NA
Aroclor 1248	<0.02	NA
Aroclor 1254	0.085	NA
Aroclor 1260	<0.02	NA
Aroclor 1262	<0.02	NA
Aroclor 1268	<0.02	NA

Note (NA) - Results were not normalized due to the low level of organic carbon present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH04-34	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-43 1/5
Date Analyzed:	10/23/13	Data File:	38.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	126	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	<13
Aroclor 1232	<0.02	<13
Aroclor 1016	<0.02	<13
Aroclor 1242	<0.02	<13
Aroclor 1248	<0.02	<13
Aroclor 1254	0.089	58
Aroclor 1260	<0.02	<13
Aroclor 1262	<0.02	<13
Aroclor 1268	<0.02	<13

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-18	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-48 1/5
Date Analyzed:	10/12/13	Data File:	70.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	33 vo	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	<0.37
Aroclor 1232	<0.02	<0.37
Aroclor 1016	<0.02	<0.37
Aroclor 1242	<0.02	<0.37
Aroclor 1248	<0.02	<0.37
Aroclor 1254	3.8 ve js	70 ve js
Aroclor 1260	<0.02	<0.37
Aroclor 1262	<0.02	<0.37
Aroclor 1268	<0.02	<0.37

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-18	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-48 1/50
Date Analyzed:	10/15/13	Data File:	34.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	40 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.2	<3.7
Aroclor 1232	<0.2	<3.7
Aroclor 1016	<0.2	<3.7
Aroclor 1242	<0.2	<3.7
Aroclor 1248	<0.2	<3.7
Aroclor 1254	2.7	50
Aroclor 1260	<0.2	<3.7
Aroclor 1262	<0.2	<3.7
Aroclor 1268	<0.2	<3.7

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-20	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-49 1/5
Date Analyzed:	10/12/13	Data File:	72.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	119	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	<0.48
Aroclor 1232	<0.02	<0.48
Aroclor 1016	<0.02	<0.48
Aroclor 1242	<0.02	<0.48
Aroclor 1248	<0.02	<0.48
Aroclor 1254	9.7 ve	230 ve
Aroclor 1260	<0.02	<0.48
Aroclor 1262	<0.02	<0.48
Aroclor 1268	<0.02	<0.48

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-20	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-49 1/100
Date Analyzed:	10/15/13	Data File:	36.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	130 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.4	<9.7
Aroclor 1232	<0.4	<9.7
Aroclor 1016	<0.4	<9.7
Aroclor 1242	<0.4	<9.7
Aroclor 1248	<0.4	<9.7
Aroclor 1254	9.3	230
Aroclor 1260	<0.4	<9.7
Aroclor 1262	<0.4	<9.7
Aroclor 1268	<0.4	<9.7

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-20 (Duplicate)	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-50 1/100
Date Analyzed:	10/15/13	Data File:	38.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	110 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.4	<11
Aroclor 1232	<0.4	<11
Aroclor 1016	<0.4	<11
Aroclor 1242	<0.4	<11
Aroclor 1248	<0.4	<11
Aroclor 1254	11	300
Aroclor 1260	<0.4	<11
Aroclor 1262	<0.4	<11
Aroclor 1268	<0.4	<11

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-22	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-51 1/5
Date Analyzed:	10/15/13	Data File:	44.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	88	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	<0.46
Aroclor 1232	<0.02	<0.46
Aroclor 1016	<0.02	<0.46
Aroclor 1242	<0.02	<0.46
Aroclor 1248	<0.02	<0.46
Aroclor 1254	2.9	67
Aroclor 1260	<0.02	<0.46
Aroclor 1262	<0.02	<0.46
Aroclor 1268	<0.02	<0.46

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-24	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-52 1/5
Date Analyzed:	10/12/13	Data File:	80.D\ECD1A.C
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	135	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	<0.33
Aroclor 1232	<0.02	<0.33
Aroclor 1016	<0.02	<0.33
Aroclor 1242	<0.02	<0.33
Aroclor 1248	<0.02	<0.33
Aroclor 1254	<0.02	<0.33
Aroclor 1260	<0.02	<0.33
Aroclor 1262	<0.02	<0.33
Aroclor 1268	<0.02	<0.33

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-28	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	310154-53 1/10
Date Analyzed:	10/16/13	Data File:	46.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MCP

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	100 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.04	<1.2
Aroclor 1232	<0.04	<1.2
Aroclor 1016	<0.04	<1.2
Aroclor 1242	<0.04	<1.2
Aroclor 1248	<0.04	<1.2
Aroclor 1254	4.9	150
Aroclor 1260	<0.04	<1.2
Aroclor 1262	<0.04	<1.2
Aroclor 1268	<0.04	<1.2

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-30	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-54 1/250
Date Analyzed:	10/23/13	Data File:	42.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	125 ds	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<1	<76
Aroclor 1232	<1	<76
Aroclor 1016	1.7	130
Aroclor 1242	<1	<76
Aroclor 1248	<1	<76
Aroclor 1254	<1	<76
Aroclor 1260	27	2,100
Aroclor 1262	<1	<76
Aroclor 1268	<1	<76

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-34	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-55 1/5
Date Analyzed:	10/23/13	Data File:	46.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	104	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.02	<7.1
Aroclor 1232	<0.02	<7.1
Aroclor 1016	0.085	30
Aroclor 1242	<0.02	<7.1
Aroclor 1248	<0.02	<7.1
Aroclor 1254	<0.02	<7.1
Aroclor 1260	1.9	670
Aroclor 1262	<0.02	<7.1
Aroclor 1268	<0.02	<7.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	JFOS2-BH05-35	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	310154-56 1/5
Date Analyzed:	10/24/13	Data File:	48.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mcp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	98	50	150

Compounds:	Concentration mg/kg (ppm)	Carbon Normalized Concentration mg/kg OC
Aroclor 1221	<0.1	<54
Aroclor 1232	<0.1	<54
Aroclor 1016	<0.1	<54
Aroclor 1242	<0.1	<54
Aroclor 1248	<0.1	<54
Aroclor 1254	<0.1	<54
Aroclor 1260	<0.1	<54
Aroclor 1262	<0.1	<54
Aroclor 1268	<0.1	<54

Note: The reporting limits are raised due to high levels of interfering compounds.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	SoundEarth Strategies
Date Received:	Not Applicable	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/10/13	Lab ID:	03-2035 mb2 1/5
Date Analyzed:	10/11/13	Data File:	10.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	115	50	150

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	SoundEarth Strategies
Date Received:	Not Applicable	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/11/13	Lab ID:	03-2043 mb 1/5
Date Analyzed:	10/11/13	Data File:	26.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	106	50	150

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	SoundEarth Strategies
Date Received:	Not Applicable	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/17/13	Lab ID:	03-2098 mb 1/5
Date Analyzed:	10/18/13	Data File:	08.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	KJ

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	111	50	150

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Trip Blank	Client:	SoundEarth Strategies
Date Received:	10/09/13	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/14/13	Lab ID:	310154-57
Date Analyzed:	10/15/13	Data File:	101444.D\ECD1A.CH
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	114	50	150

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	SoundEarth Strategies
Date Received:	Not Applicable	Project:	SOU_0995-001-04_20131009, F&BI 310154
Date Extracted:	10/14/13	Lab ID:	03-2078 mb
Date Analyzed:	10/14/13	Data File:	101438.D\ECD1A.CH
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	84	50	150

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Date of Report: 10/28/13
Date Received: 10/09/13
Project: SOU_0995-001-04_20131009, F&BI 310154

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 310141-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.8	<0.02	92	85	50-150	8
Aroclor 1260	mg/kg (ppm)	0.8	0.16	85	75	50-150	12

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.8	102	70-130
Aroclor 1260	mg/kg (ppm)	0.8	102	70-130

Date of Report: 10/28/13
Date Received: 10/09/13
Project: SOU_0995-001-04_20131009, F&BI 310154

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 310154-08 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.8	<0.02	111	93	50-150	18
Aroclor 1260	mg/kg (ppm)	0.8	<0.02	112	90	50-150	22 vo

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.8	97	70-130
Aroclor 1260	mg/kg (ppm)	0.8	96	70-130

Date of Report: 10/28/13
Date Received: 10/09/13
Project: SOU_0995-001-04_20131009, F&BI 310154

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 310271-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.8	<0.1	132	122	50-150	8
Aroclor 1260	mg/kg (ppm)	0.8	<0.1	120	113	50-150	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.8	119	70-130
Aroclor 1260	mg/kg (ppm)	0.8	106	70-130

Date of Report: 10/28/13
Date Received: 10/09/13
Project: SOU_0995-001-04_20131009, F&BI 310154

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	2.5	110	115	70-130	4
Aroclor 1260	ug/L (ppb)	2.5	103	106	70-130	3

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

310154

SAMPLE CHAIN OF CUSTODY ME 10-9-13

1405

Page # 1 of 6

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.	PO #
Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)	0995-001-04

REMARKS X-per DG 10/10/13 ml

Hold

TURNAROUND TIME
Standard (2 Weeks)
X RUSH 3-Day TAT per DG
Rush charges authorized by: ml

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon 10/14/13	Notes
JFOS2BH01-02	JFOS2BH01	02	01	10-8-13	0900	Soil	1			X-per DG 10/17/13 ml
JFOS2BH01-04		04	02		0905		1			
JFOS2BH01-06		06	03		0910		1			
JFOS2BH01-08		08	04		0915		1			
[redacted]					[redacted]					
JFOS2BH01-12		12	05		0920		1			
JFOS2BH01-14		14	06		0925		1			Samples received at 5 °C
JFOS2BH01-16		16	07		0930		1	X	X	
JFOS2BH01-18		18	08		0935		1	X	X	
JFOS2BH01-20		20	09		0940		1	X	X	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Nhan Phan	FedEx	10/9/13	0917
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

310154

SAMPLE CHAIN OF CUSTODY ME 10-9-13 005

Page # 2 of 6

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) Chris Cass

PROJECT NAME/NO.: Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)

PO #: 0995-001-04

REMARKS: Hold

TURNAROUND TIME: Standard (2 Weeks) RUSH

Rush charges authorized by:

SAMPLE DISPOSAL: Dispose after 30 days; Return samples; Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOS2BH01-22	JFOS2BH01	22	10	10-8-13	0945	Soil	1	X	X	
JFOS2BH01-24		24	11		0950		1	X	X	
JFOS2BH01-26		26	12		0955		1			
JFOS2BH01-28		28	13		1000		1			
JFOS2BH01-30		30	14		1005		1			
JFOS2BH02-02	JFOS2BH02	02	15		1035		1			
JFOS2BH02-07		07	16		1040		1			
JFOS2BH02-12		12	17		1215		1			
JFOS2BH02-16		16	18		1220		1			Samples received at 5
JFOS2BH03-03	JFOS2BH03	03	19		1230		1			
JFOS2BH02-10	JFOS2BH02	10	20		1045		1			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Nhan Pham	FEBI	10/9/13	0917
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

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SAMPLE CHAIN OF CUSTODY ME 10-9-13 005

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Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.: Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)

PO #: 0995-001-04

REMARKS: N.A.

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOSD-BH03-07	JFOSD BH03	07	21	10-8-13	1235	Soil	1			
JFOSD-BH03-12	JFOSD BH03	12	22		1240	Soil	1			
JFOSD-BH03-18		18	23		1245		1	X	X	
JFOSD-BH03-20		20	24		1250		1	X	X	
JFOSD-BH03-22		22	25		1255		1	X	X	
JFOSD-BH03-24		24	26		1300		1	X	X	
JFOSD-BH03-26		26	27		1305		1	X	X	
JFOSD-BH03-28		28	28		1310		1	X	X	
JFOSD-BH03-30		30	29		1315		1	X	X	Samples received at 5 °C
JFOSD-BH03-32		32	30		1400		1	X	X	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Nhan Phan	FEBT	10/9/13	0917
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

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* SAMPLE CHAIN OF CUSTODY ME 10-9-13

COC 4 of 6

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.	PO #
Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)	0995-001-04

REMARKS

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOS2-BH03-34	JFOS2-BH03	34	31	10-8-13	1405	Soil	1	X	X	
JFOS2-BH04-02	JFOS2-BH04	02	32		1430		1			
JFOS2-BH04-07	JFOS2-BH04	07	33		1425		1			
JFOS2-BH04-12	JFOS2-BH04	12	34		1430		1			
JFOS2-BH04-12 (Duplicate)		12	35		1435		1			
JFOS2-BH04-17	JFOS2-BH04	17	36		1440		1	X	X	
JFOS2-BH04-19	"	19	37		1455		1	X	X	
JFOS2-BH04-19 (Duplicate)	"	19	38		1450		1	X	X	
JFOS2-BH04-21	JFOS2-BH04	21	39		1455		1	X	X	Samples received at 5 °C
JFOS2-BH04-23	"	23	40	↓	1500	↓	1	X	X	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Khan Phan	FEBI	V	V
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

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SAMPLE CHAIN OF CUSTODY ME 10-9-13

Page # 5 COC of 6

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.: Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)

PO #: 0995-001-04

REMARKS: H-12

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOSD-BH04-30	JFOSDBH04	30	41	10-8-13	1505	Soil	1	X	X	
JFOSD-BH04-32		32	42		1515	Soil	1	X	X	
JFOSD-BH04-34		34	43		1520	Soil	1	X	X	
JFOSD-BH05-00	JFOSD-BH05	00	44		1540		1			
JFOSD-BH05-07	JFOSD-BH05	07	45		1545		1			
JFOSD-BH05-12	"	12	46		1600		1			
JFOSD-BH05-14	"	14	47		1615		1			
JFOSD-BH05-18		18	48		1610		1	X	X	
JFOSD-BH05-20		20	49		1615		1	X	X	Samples received at 5 °C
JFOSD-BH05-20(Duplicate)		20	50		1620		1	X	X	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Coss	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Nhan Phan	FEBI	10/9/13	V
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
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Fax (206) 283-5044

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SAMPLE CHAIN OF CUSTODY ME 10-9-13

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) Chris Cass

PROJECT NAME/NO.	PO #
Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)	0995-001-04

REMARKS

Hold

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOSD-BHCS-33	JFOSD-BHCS	33	51	10-8-13	1605	Soil	1	X	X	
JFOSD-BHCS-34	JFOSD-BHCS	34	52	"	1630		1	X	X	
JFOSD-BHCS-35	JFOSD-BHCS	35	53	"	1635		1	X	X	
JFOSD-BHCS-36	JFOSD-BHCS	36	54	"	1640		1	X	X	
JFOSD-BHCS-37	"	37	55	"	1645		1	X	X	
JFOSD-BHCS-38	↓	38	56	"	1650	↓	1	X	X	
Trip Blank	—	—	057	—	—	Soil	1	X	X	

Samples received at 5 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0910
Received by:	Nhan Phan	FedEx	〃	〃
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 2, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the additional results from the testing of material submitted on October 9, 2013 from the SOU_0995-001-04_20131009, F&BI 310154 project. There are 2 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
SOU1202R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 9, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies SOU_0995-001-04_20131009, F&BI 310154 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	SoundEarth Strategies
310154-01	JFOS2-BH01-02
310154-02	JFOS2-BH01-04
310154-03	JFOS2-BH01-06
310154-04	JFOS2-BH01-08
310154-05	JFOS2-BH01-12
310154-06	JFOS2-BH01-14
310154-07	JFOS2-BH01-16
310154-08	JFOS2-BH01-18
310154-09	JFOS2-BH01-20
310154-10	JFOS2-BH01-22
310154-11	JFOS2-BH01-24
310154-12	JFOS2-BH01-26
310154-13	JFOS2-BH01-28
310154-14	JFOS2-BH01-30
310154-15	JFOS2-BH02-02
310154-16	JFOS2-BH02-07
310154-17	JFOS2-BH02-12
310154-18	JFOS2-BH02-16
310154-19	JFOS02-BH03-03
310154-20	JFOS02-BH02-10
310154-21	JFOS2-BH03-07
310154-22	JFOS2-BH03-12
310154-23	JFOS2-BH03-18
310154-24	JFOS2-BH03-20
310154-25	JFOS2-BH03-22
310154-26	JFOS2-BH03-24
310154-27	JFOS2-BH03-26
310154-28	JFOS2-BH03-28
310154-29	JFOS2-BH03-30
310154-30	JFOS2-BH03-32
310154-31	JFOS2-BH03-34
310154-32	JFOS2-BH04-02
310154-33	JFOS2-BH04-07
310154-34	JFOS2-BH04-12
310154-35	JFOS2-BH04-12 (Duplicate)
310154-36	JFOS2-BH04-17
310154-37	JFOS2-BH04-19

CASE NARRATIVE (continued)

310154-38	JFOS2-BH04-19 (Duplicate)
310154-39	JFOS2-BH04-21
310154-40	JFOS2-BH04-23
310154-41	JFOS2-BH04-30
310154-42	JFOS2-BH04-32
310154-43	JFOS2-BH04-34
310154-44	JFOS2-BH05-02
310154-45	JFOS2-BH05-07
310154-46	JFOS2-BH05-12
310154-47	JFOS2-BH05-14
310154-48	JFOS2-BH05-18
310154-49	JFOS2-BH05-20
310154-50	JFOS2-BH05-20 (Duplicate)
310154-51	JFOS2-BH05-22
310154-52	JFOS2-BH05-24
310154-53	JFOS2-BH05-28
310154-54	JFOS2-BH05-30
310154-55	JFOS2-BH05-34
310154-56	JFOS2-BH05-35
310154-57	Trip Blank

The initial soil samples analyzed for 8082A PCB analysis were sent to Fremont Analytical for TOC analysis. The results are included.

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

RE: 310154
Lab ID: 1311222

November 25, 2013

Attention Michael Erdahl:

Fremont Analytical, Inc. received 56 sample(s) on 11/20/2013 for the analyses presented in the following report.

Total Organic Carbon by EPA Method 9060

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

M Clements

Michelle Clements
Sr. Chemist / Lab Manager

Fremont Analytical

Date: *11/25/2013*

CLIENT: Friedman & Bruya
Project: 310154
Lab Order: 1311222

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1311222-001	JFOS2-BH01-02	10/08/2013 9:00 AM	11/20/2013 10:30 AM
1311222-002	JFOS2-BH01-04	10/08/2013 9:05 AM	11/20/2013 10:30 AM
1311222-003	JFOS2-BH01-06	10/08/2013 9:10 AM	11/20/2013 10:30 AM
1311222-004	JFOS2-BH01-08	10/08/2013 9:15 AM	11/20/2013 10:30 AM
1311222-005	JFOS2-BH01-12	10/08/2013 9:20 AM	11/20/2013 10:30 AM
1311222-006	JFOS2-BH01-14	10/08/2013 9:25 AM	11/20/2013 10:30 AM
1311222-007	JFOS2-BH01-16	10/08/2013 9:30 AM	11/20/2013 10:30 AM
1311222-008	JFOS2-BH01-18	10/08/2013 9:35 AM	11/20/2013 10:30 AM
1311222-009	JFOS2-BH01-20	10/08/2013 9:40 AM	11/20/2013 10:30 AM
1311222-010	JFOS2-BH01-22	10/08/2013 9:45 AM	11/20/2013 10:30 AM
1311222-011	JFOS2-BH01-24	10/08/2013 9:50 AM	11/20/2013 10:30 AM
1311222-012	JFOS2-BH01-26	10/08/2013 9:55 AM	11/20/2013 10:30 AM
1311222-013	JFOS2-BH01-28	10/08/2013 10:00 AM	11/20/2013 10:30 AM
1311222-014	JFOS2-BH01-30	10/08/2013 10:05 AM	11/20/2013 10:30 AM
1311222-015	JFOS2-BH02-02	10/08/2013 10:35 AM	11/20/2013 10:30 AM
1311222-016	JFOS2-BH02-07	10/08/2013 10:40 AM	11/20/2013 10:30 AM
1311222-017	JFOS2-BH02-12	10/08/2013 12:15 PM	11/20/2013 10:30 AM
1311222-018	JFOS2-BH02-16	10/08/2013 12:20 PM	11/20/2013 10:30 AM
1311222-019	JFOS2-BH03-03	10/08/2013 12:30 PM	11/20/2013 10:30 AM
1311222-020	JFOS2-BH02-10	10/08/2013 10:45 AM	11/20/2013 10:30 AM
1311222-021	JFOS2-BH03-07	10/08/2013 12:35 PM	11/20/2013 10:30 AM
1311222-022	JFOS2-BH03-12	10/08/2013 12:40 PM	11/20/2013 10:30 AM
1311222-023	JFOS2-BH03-18	10/08/2013 12:45 PM	11/20/2013 10:30 AM
1311222-024	JFOS2-BH03-20	10/08/2013 12:50 PM	11/20/2013 10:30 AM
1311222-025	JFOS2-BH03-22	10/08/2013 12:55 PM	11/20/2013 10:30 AM
1311222-026	JFOS2-BH03-24	10/08/2013 1:00 PM	11/20/2013 10:30 AM
1311222-027	JFOS2-BH03-26	10/08/2013 1:05 PM	11/20/2013 10:30 AM
1311222-028	JFOS2-BH03-28	10/08/2013 1:10 PM	11/20/2013 10:30 AM
1311222-029	JFOS2-BH03-30	10/08/2013 1:15 PM	11/20/2013 10:30 AM
1311222-030	JFOS2-BH03-32	10/08/2013 2:00 PM	11/20/2013 10:30 AM
1311222-031	JFOS2-BH03-34	10/08/2013 2:05 PM	11/20/2013 10:30 AM
1311222-032	JFOS2-BH04-02	10/08/2013 2:20 PM	11/20/2013 10:30 AM
1311222-033	JFOS2-BH04-07	10/08/2013 2:25 PM	11/20/2013 10:30 AM
1311222-034	JFOS2-BH04-12	10/08/2013 2:30 PM	11/20/2013 10:30 AM
1311222-035	JFOS2-BH04-12(Dup)	10/08/2013 2:35 PM	11/20/2013 10:30 AM
1311222-036	JFOS2-BH04-17	10/08/2013 2:40 PM	11/20/2013 10:30 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: Friedman & Bruya
Project: 310154
Lab Order: 1311222

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1311222-037	JFOS2-BH04-19	10/08/2013 2:55 PM	11/20/2013 10:30 AM
1311222-038	JFOS2-BH04-19(Dup)	10/08/2013 2:50 PM	11/20/2013 10:30 AM
1311222-039	JFOS2-BH04-21	10/08/2013 2:55 PM	11/20/2013 10:30 AM
1311222-040	JFOS2-BH04-23	10/08/2013 3:00 PM	11/20/2013 10:30 AM
1311222-041	JFOS2-BH04-30	10/08/2013 3:05 PM	11/20/2013 10:30 AM
1311222-042	JFOS2-BH04-32	10/08/2013 3:15 PM	11/20/2013 10:30 AM
1311222-043	JFOS2-BH04-34	10/08/2013 3:20 PM	11/20/2013 10:30 AM
1311222-044	JFOS2-BH05-02	10/08/2013 3:40 PM	11/20/2013 10:30 AM
1311222-045	JFOS2-BH05-07	10/08/2013 3:45 PM	11/20/2013 10:30 AM
1311222-046	JFOS2-BH05-12	10/08/2013 4:00 PM	11/20/2013 10:30 AM
1311222-047	JFOS2-BH05-14	10/08/2013 4:05 PM	11/20/2013 10:30 AM
1311222-048	JFOS2-BH05-18	10/08/2013 4:10 PM	11/20/2013 10:30 AM
1311222-049	JFOS2-BH05-20	10/08/2013 4:15 PM	11/20/2013 10:30 AM
1311222-050	JFOS2-BH05-20(Dup)	10/08/2013 4:20 PM	11/20/2013 10:30 AM
1311222-051	JFOS2-BH05-22	10/08/2013 4:25 PM	11/20/2013 10:30 AM
1311222-052	JFOS2-BH05-24	10/08/2013 4:30 PM	11/20/2013 10:30 AM
1311222-053	JFOS2-BH05-28	10/08/2013 4:35 PM	11/20/2013 10:30 AM
1311222-054	JFOS2-BH05-30	10/08/2013 4:40 PM	11/20/2013 10:30 AM
1311222-055	JFOS2-BH05-34	10/08/2013 4:45 PM	11/20/2013 10:30 AM
1311222-056	JFOS2-BH05-35	10/08/2013 4:50 PM	11/20/2013 10:30 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Fremont Analytical

Case Narrative

WO#: **1311222**
Date: **11/25/2013**

CLIENT: Friedman & Bruya
Project: 310154

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-007 **Collection Date:** 10/8/2013 9:30:00 AM
Client Sample ID: JFOS2-BH01-16 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	0.642	0.0500	H	%-dry	1	11/21/2013 3:17:23 PM

Lab ID: 1311222-008 **Collection Date:** 10/8/2013 9:35:00 AM
Client Sample ID: JFOS2-BH01-18 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 3:36:23 PM

Lab ID: 1311222-009 **Collection Date:** 10/8/2013 9:40:00 AM
Client Sample ID: JFOS2-BH01-20 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 3:48:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-010 **Collection Date:** 10/8/2013 9:45:00 AM
Client Sample ID: JFOS2-BH01-22 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 4:07:23 PM

Lab ID: 1311222-011 **Collection Date:** 10/8/2013 9:50:00 AM
Client Sample ID: JFOS2-BH01-24 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 4:27:23 PM

Lab ID: 1311222-023 **Collection Date:** 10/8/2013 12:45:00 PM
Client Sample ID: JFOS2-BH03-18 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	2.65	0.0500	H	%-dry	1	11/21/2013 4:44:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-024 **Collection Date:** 10/8/2013 12:50:00 PM
Client Sample ID: JFOS2-BH03-20 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	7.93	0.0500	EH	%-dry	1	11/22/2013 11:34:23 AM

Lab ID: 1311222-025 **Collection Date:** 10/8/2013 12:55:00 PM
Client Sample ID: JFOS2-BH03-22 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	3.29	0.0500	H	%-dry	1	11/22/2013 11:55:23 AM

Lab ID: 1311222-026 **Collection Date:** 10/8/2013 1:00:00 PM
Client Sample ID: JFOS2-BH03-24 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 11:46:23 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-027 **Collection Date:** 10/8/2013 1:05:00 PM
Client Sample ID: JFOS2-BH03-26 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	0.142	0.0500	H	%-dry	1	11/22/2013 12:23:23 PM

Lab ID: 1311222-028 **Collection Date:** 10/8/2013 1:10:00 PM
Client Sample ID: JFOS2-BH03-28 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 12:56:23 PM

Lab ID: 1311222-029 **Collection Date:** 10/8/2013 1:15:00 PM
Client Sample ID: JFOS2-BH03-30 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 1:08:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-030 **Collection Date:** 10/8/2013 2:00:00 PM
Client Sample ID: JFOS2-BH03-32 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 1:20:23 PM

Lab ID: 1311222-031 **Collection Date:** 10/8/2013 2:05:00 PM
Client Sample ID: JFOS2-BH03-34 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 1:40:23 PM

Lab ID: 1311222-036 **Collection Date:** 10/8/2013 2:40:00 PM
Client Sample ID: JFOS2-BH04-17 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	1.97	0.0500	H	%-dry	1	11/22/2013 1:10:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-037 **Collection Date:** 10/8/2013 2:55:00 PM
Client Sample ID: JFOS2-BH04-19 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	1.88	0.0500	H	%-dry	1	11/22/2013 1:27:23 PM

Lab ID: 1311222-038 **Collection Date:** 10/8/2013 2:50:00 PM
Client Sample ID: JFOS2-BH04-19(Dup) **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	1.53	0.0500	H	%-dry	1	11/22/2013 1:48:23 PM

Lab ID: 1311222-039 **Collection Date:** 10/8/2013 2:55:00 PM
Client Sample ID: JFOS2-BH04-21 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	0.887	0.0500	H	%-dry	1	11/22/2013 2:06:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-040 **Collection Date:** 10/8/2013 3:00:00 PM
Client Sample ID: JFOS2-BH04-23 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	2.32	0.0500	H	%-dry	1	11/25/2013 2:37:47 PM

Lab ID: 1311222-041 **Collection Date:** 10/8/2013 3:05:00 PM
Client Sample ID: JFOS2-BH04-30 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	1.08	0.0500	H	%-dry	1	11/22/2013 2:45:47 PM

Lab ID: 1311222-042 **Collection Date:** 10/8/2013 3:15:00 PM
Client Sample ID: JFOS2-BH04-32 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	ND	0.0500	H	%-dry	1	11/21/2013 1:51:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-043 **Collection Date:** 10/8/2013 3:20:00 PM
Client Sample ID: JFOS2-BH04-34 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5958		Analyst: PH
Total Organic Carbon	0.154	0.0500	H	%-dry	1	11/21/2013 2:18:23 PM

Lab ID: 1311222-048 **Collection Date:** 10/8/2013 4:10:00 PM
Client Sample ID: JFOS2-BH05-18 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	5.40	0.0500	H	%-dry	1	11/22/2013 3:02:47 PM

Lab ID: 1311222-049 **Collection Date:** 10/8/2013 4:15:00 PM
Client Sample ID: JFOS2-BH05-20 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	4.13	0.0500	H	%-dry	1	11/22/2013 3:22:47 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-050 **Collection Date:** 10/8/2013 4:20:00 PM
Client Sample ID: JFOS2-BH05-20(Dup) **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	3.63	0.0500	H	%-dry	1	11/22/2013 3:58:47 PM

Lab ID: 1311222-051 **Collection Date:** 10/8/2013 4:25:00 PM
Client Sample ID: JFOS2-BH05-22 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	4.32	0.0500	H	%-dry	1	11/22/2013 5:46:47 PM

Lab ID: 1311222-052 **Collection Date:** 10/8/2013 4:30:00 PM
Client Sample ID: JFOS2-BH05-24 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	5.98	0.0500	H	%-dry	1	11/25/2013 2:58:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-053 **Collection Date:** 10/8/2013 4:35:00 PM
Client Sample ID: JFOS2-BH05-28 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	3.34	0.0500	H	%-dry	1	11/25/2013 3:24:00 PM

Lab ID: 1311222-054 **Collection Date:** 10/8/2013 4:40:00 PM
Client Sample ID: JFOS2-BH05-30 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	1.31	0.0500	H	%-dry	1	11/25/2013 3:48:00 PM

Lab ID: 1311222-055 **Collection Date:** 10/8/2013 4:45:00 PM
Client Sample ID: JFOS2-BH05-34 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	0.282	0.0500	H	%-dry	1	11/22/2013 5:59:47 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Analytical Report

WO#: **1311222**
Date Reported: **11/25/2013**

CLIENT: Friedman & Bruya
Project: 310154

Lab ID: 1311222-056 **Collection Date:** 10/8/2013 4:50:00 PM
Client Sample ID: JFOS2-BH05-35 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Organic Carbon by EPA Method 9060				Batch ID: 5960		Analyst: PH
Total Organic Carbon	0.185	0.0500	H	%-dry	1	11/25/2013 4:07:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Date: *11/25/2013*

Work Order: 1311222
CLIENT: Friedman & Bruya
Project: 310154

QC SUMMARY REPORT

Total Organic Carbon by EPA Method 9060

Sample ID: **MB-5958**	SampType: **MBLK**			Units: **%-dry**		Prep Date: **11/21/2013**		RunNo: **11234**			
Client ID: **MBLKS**	Batch ID: **5958**					Analysis Date: **11/21/2013**		SeqNo: **224143**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	ND	0.0500									

Sample ID: **LCS-5958**	SampType: **LCS**			Units: **%-dry**		Prep Date: **11/21/2013**		RunNo: **11234**			
Client ID: **LCSS**	Batch ID: **5958**					Analysis Date: **11/21/2013**		SeqNo: **224144**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	0.485	0.0500	0.6510	0	74.5	41.1	157				

Sample ID: **1311222-026ADUP**	SampType: **DUP**			Units: **%-dry**		Prep Date: **11/21/2013**		RunNo: **11234**			
Client ID: **JFOS2-BH03-24**	Batch ID: **5958**					Analysis Date: **11/21/2013**		SeqNo: **224146**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	ND	0.0500						0		30	H

Sample ID: **1311222-026AMS**	SampType: **MS**			Units: **%-dry**		Prep Date: **11/21/2013**		RunNo: **11234**			
Client ID: **JFOS2-BH03-24**	Batch ID: **5958**					Analysis Date: **11/21/2013**		SeqNo: **224147**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	0.784	0.0500	1.000	0.02875	75.5	50.2	118				H

Sample ID: **1311222-026AMSD**	SampType: **MSD**			Units: **%-dry**		Prep Date: **11/21/2013**		RunNo: **11234**			
Client ID: **JFOS2-BH03-24**	Batch ID: **5958**					Analysis Date: **11/21/2013**		SeqNo: **224148**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	0.762	0.0500	1.000	0.02875	73.4	50.2	118	0.7841	2.81	20	H

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Date: *11/25/2013*

Work Order: 1311222
CLIENT: Friedman & Bruya
Project: 310154

QC SUMMARY REPORT

Total Organic Carbon by EPA Method 9060

Sample ID: MB-5960	SampType: MBLK			Units: %-dry		Prep Date: 11/22/2013		RunNo: 11235			
Client ID: MBLKS	Batch ID: 5960					Analysis Date: 11/22/2013		SeqNo: 224178			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	ND	0.0500									

Sample ID: LCS-5960	SampType: LCS			Units: %-dry		Prep Date: 11/22/2013		RunNo: 11235			
Client ID: LCSS	Batch ID: 5960					Analysis Date: 11/22/2013		SeqNo: 224179			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	0.584	0.0500	0.6510	0	89.6	41.1	157				

Sample ID: 1311222-055ADUP	SampType: DUP			Units: %-dry		Prep Date: 11/22/2013		RunNo: 11235			
Client ID: JFOS2-BH05-34	Batch ID: 5960					Analysis Date: 11/22/2013		SeqNo: 224186			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	0.331	0.0500						0.2820	15.9	30	H

Sample ID: 1311222-055AMS	SampType: MS			Units: %-dry		Prep Date: 11/22/2013		RunNo: 11235			
Client ID: JFOS2-BH05-34	Batch ID: 5960					Analysis Date: 11/22/2013		SeqNo: 224187			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	1.08	0.0500	1.000	0.2820	80.2	50.2	118				H

Sample ID: 1311222-055AMSD	SampType: MSD			Units: %-dry		Prep Date: 11/22/2013		RunNo: 11235			
Client ID: JFOS2-BH05-34	Batch ID: 5960					Analysis Date: 11/22/2013		SeqNo: 224188			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	1.08	0.0500	1.000	0.2820	80.3	50.2	118	1.084	0.0922	20	H

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Date: *11/25/2013*

Work Order: 1311222
CLIENT: Friedman & Bruya
Project: 310154

QC SUMMARY REPORT

Total Organic Carbon by EPA Method 9060

Sample ID: **CCV-5960C**	SampType: **CCV**	Units: **%-dry**	Prep Date: **11/25/2013**	RunNo: **11235**
Client ID: **CCV**	Batch ID: **R11235**		Analysis Date: **11/25/2013**	SeqNo: **225248**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	1.00	0.0500	1.000	0	100	85	115				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Sample Log-In Check List

Client Name:	**FB**	Work Order Number:	**1311222**
Logged by:	**Chelsea Ward**	Date Received:	**11/20/2013 10:30:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Courier		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Required ☐
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all coolers received at a temperature of >0°C to 10.0°C	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is the headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☐	No ☑	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

No Trip Blank with samples.

Item Information

Item #	Temp °C	Condition
Cooler	3.9	Good
Sample	5.2	Good

1311222

SAMPLE CHAIN OF CUSTODY ME 10-9-13

C05

Page # 1 of 6

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

3012 16th Avenue West • Seattle, Washington 98119-2029
(206) 285-8282 • Fax: (206) 283-5044 • e-mail: fbi@isomedia.com

SAMPLERS (signature) [signature]

PROJECT: Jorgense 310154 ...ase 4A

PO# C-656 ~~0995-001-04~~

REMARKS: 10/13 ... Hold ★ Run Toc only. 2 Day TAT ★ Return Samples

TURNAROUND TIME
Standard (2 Weeks)
X RUSH 3-Day TAT per DG
Rush charges authorized by: ...

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	PCBs by U.S. EPA Method 8082	Total Organic Carbon per DG 11/16/13							Notes
JFOS2BH01-02	JFOS2BH01	02	01	10-8-13	0900	Soil	1									* per DG 10/17/13 MG
JFOS2BH01-04		04	02		0905		1									
JFOS2BH01-06		06	03		0910		1									
JFOS2BH01-08		08	04		0915		1									
~~JFOS2BH01-10~~					~~0916~~											
JFOS2BH01-12		10	05		0920		1									
JFOS2BH01-14		14	06		0925		1									Samples received at 5 °C
JFOS2BH01-16		16	07		0930		1	X	X							
JFOS2BH01-18		18	08		0935		1	X	X							
JFOS2BH01-20		20	09		0940		1	X	X							

Friedman & Bruya, Inc.
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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Chris Cross	SoundEarth Strategies, Inc.	10-9-13	0917
Received by: [signature]	Nhan Phan	FeBI	10/9/13	0917
Relinquished by: [signature]	Michael Erdahl	FBI	11/20/13	0940
Received by: [signature]	Chelsea Ward	FAI	11/2013	10:30

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1311222

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Michael Erdahl
Project Manager

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SAMPLE CHAIN OF CUSTODY ME 10-9-13 C05

SAMPLERS (signature) [signature]

PROJECT: Jorgensen 310154 ...e 4A

PO #: C-656 ~~0995-001-01~~

REMARKS: hold

Page # 2 of 6

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	PCBs by U.S. EPA Method 8082	Total Organic Carbon								Notes
JFCS2-BH01-22	JFOS2BH01	22	10	10-8-13	0945	Soil	1	X	X								
JFOS2-BH01-24		24	11		0950		1	X	X								
JFOS2BH01-26		26	12		0955		1										
JFOS2-BH01-28		28	13		1000		1										
JFOS2-BH01-30		30	14		1005		1										
JFOS2-BH02-02	JFOS2-BH02	02	15		1035		1										
JFOS2-BH0207		07	16		1040		1										
JFOS2-BH02-12		12	17		1215		1										
JFOS2-BH0216		16	18		1220		1										Samples received at 5
JFOS02BH03-03	JFOS2-BH03	03	19		1230		1										
JFOS02BH02-10	JFOS2-BH02	10	20		1045												

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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by: [signature]	Nhan Phan	FEBI	10/9/13	0917
Relinquished by: [signature]	Michael Erdahl	FEBI	11/20/13	9:40
Received by: [signature]	Chelsea Ward	FAI	11/20/13	10:30

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Project Manager

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SAMPLE CHAIN OF CUSTODY ME 10-9-13 005

Page # 3 of 6

SAMPLERS (signature)

PROJ
Jorge 310154 Phase 4A

PO # C-656 ~~0095-001-04~~

REM
Hill

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOSD-BH03-07	JFOSDBH03	07	21	10-8-13	1235	Soil	1			
JFOSD BH03-12	JFOSDBH03	12	22		1240	Soil	1			
JFOSD-BH03-18		18	23		1245		1	X	X	
JFOSD-BH03-20		20	24		1250		1	X	X	
JFOSD-BH03-22		22	25		1255		1	X	X	
JFOSD-BH03-24		24	26		1300		1	X	X	
JFOSD-BH03-26		26	27		1305		1	X	X	
JFOSD-BH03-28		28	28		1310		1	X	X	
JFOSD-BH03-30		30	29		1315		1	X	X	Samples received at 5 °C
JFOSD-BH03-32		32	30		1400		1	X	X	

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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Nhan Phan	FB&T	10/9/13	0917
Relinquished by:	Michael Erdahl	FB&T	11/20/13	9:45
Received by:	Chelsea Ward	FBI	11/20/13	10:30

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

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SAMPLE CHAIN OF CUSTODY HE 10-9-13

COC 4 of 6

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PROJE 310154

Jorgen ase 4A

PO # C-676 ~~0995-001-04~~

REMAR

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	PCBs by U.S. EPA Method 8082	Total Organic Carbon	Notes
JFOSJ-BH03-34	JFOSJ-BH03	34	31	10-8-13	1405	Soil	1	X	X	
JFOSJ-BH04-02	JFOSJ-BH04	02	32		1420		1			
JFOSJ-BH04-07	JFOSJ-BH04	07	33		1425		1			
JFOSJ-BH04-12	JFOSJ-BH04	12	34		1430		1			
JFOSJ-BH04-12 (Duplicate)	"	12	35		1435		1			
JFOSJ-BH04-17	JFOSJ-BH04	17	36		1440		1	X	X	
JFOSJ-BH04-19	"	19	37		1455		1	X	X	
JFOSJ-BH04-19 (Duplicate)	"	19	38		1450		1	X	X	
JFOSJ-BH04-21	JFOSJ-BH04	21	39		1455		1	X	X	
JFOSJ-BH04-23	"	23	40	↓	1500	↓	1	X	X	

Samples received at 5 °C

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Khan Pham	FBI	V	V
Relinquished by:	Michael Erdahl	FBI	10/20/13	9:41
Received by:	Chelsea Ward	FBI	10/20/13	10:40

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SAMPLE CHAIN OF CUSTODY ME 10-9-13

Page # 5 COS 6 of

SAMPLERS (signature)

PROJECT: Jorgense 310154 se 4A

PO # C456 ~~0905-001-04~~

REMARKS: Hold

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOSD-BH04-32	JFOSD-BH04	32	41	11-8-13	1505	~~Soil~~	1	X	X	
JFOSD-BH04-33		33	42		1515	Soil	1	X	X	
JFOSD-BH04-34		34	43		1520	Soil	1	X	X	
JFOSD-BH05-00	JFOSD-BH05	00	44		1540		1			
JFOSD-BH05-07	JFOSD-BH05	07	45		1545		1			
JFOSD-BH05-12	"	12	46		1610		1			
JFOSD-BH05-14	"	14	47		1615		1			
JFOSD-BH05-18		18	48		1616		1	X	X	
JFOSD-BH05-20		20	49		1615		1	X	X	
JFOSD-BH05-20(Duplicate)		20	50		1620		1	X	X	

Samples received at 5 °C

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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Coss	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Nhan Phan	FEBI	10/9/13	V
Relinquished by:	Michael Erdahl	FBI	11/20/13	9:40
Received by:	Chelsea Ward	FBI	11/20/13	10:30

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Michael Erdahl
Project Manager

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SAMPLE CHAIN OF CUSTODY ME 10-9-13

Page # 6 of 6

SAMPLERS (signature): Chris Cass

PROJE
Jorgen 310154 ase 4A PO # C-65C 0995-001-04

REMAI
Hold

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	Total Organic Carbon							Notes
JFOSD-BHCS-22	JFOSD BHCS	22	51	10-8-13	1635	Soil	1	X	X							
JFOSD BHCS-24	JFOSD-BHCS	24	52	"	1630		1	X	X							
JFOSD-BHCS-28	JFOSD-BHCS	28	53	"	1635		1	X	X							
JFOSD-BHCS-30	JFOSD-BHCS	30	54	"	1640		1	X	X							
JFOSD-BHCS-34	↓	34	55	"	1645		1	X	X							
JFOSD-BHCS-35	↓	35	56	"	1650	↓	1	X	X							
Trip Blank	—	—	057	—	—	Soil	1	X	X							

Samples received at 5 °C

Friedman & Bruya, Inc.
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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0918
Received by:	Khan Phan	FEBI	〃	〃
Relinquished by:	Michael Erdahl	FBI	10/10/13	9:40
Received by:	Chelsea Ward	FBI	10/10/13	10:30

310154

SAMPLE CHAIN OF CUSTODY ME 10-9-13

1405

Page # 1 of 6

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.	PO #
Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)	0995-001-04

REMARKS X-per DG 10/10/13 MG

~~Hold~~

TURNAROUND TIME
Standard (2 Weeks)
X RUSH 3-Day TAT per DG
Rush charges authorized by: MG

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon per 10/11/13	Notes
JFOS2BH01-02	JFOS2BH01	02	01	10-8-13	0900	Soil	1			X-per DG 10/17/13 MG
JFOS2BH01-04	"	04	02	"	0905	"	1			
JFOS2BH01-06	"	06	03	"	0910	"	1			
JFOS2BH01-08	"	08	04	"	0915	"	1			
~~JFOS2BH01-10~~					~~0920~~					
JFOS2BH01-12	"	12	05	"	0920	"	1			
JFOS2BH01-14	"	14	06	"	0925	"	1			Samples received at 5 °C
JFOS2BH01-16	"	16	07	"	0930	"	1	X	X	
JFOS2BH01-18	"	18	08	"	0935	"	1	X	X	Samples Sampled
JFOS2BH01-20	"	20	09	"	0940	"	1	X	X	

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:	Nhan Phan	FEBI	10/9/13	0917
Relinquished by:				
Received by:				

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SAMPLE CHAIN OF CUSTODY ME 10-9-13 05

Page # 2 of 6

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) Chris Cass

PROJECT NAME/NO.	PO #
Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)	0995-001-04

REMARKS

Hold

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOS2BH01-22	JFOS2BH01	22	10	10-8-13	0945	Soil	1	X	X	
JFOS2BH01-24		24	11		0950		1	X	X	
JFOS2BH01-26		26	12		0955		1			
JFOS2BH01-28		28	13		1000		1			
JFOS2BH01-30		30	14		1005		1			
JFOS2BH02-02	JFOS2BH02	02	15		1035		1			
JFOS2BH02-07		07	16		1040		1			
JFOS2BH02-12		12	17		1215		1			
JFOS2BH02-16		16	18		1220		1			Samples received at 5
JFOS2BH03-03	JFOS2BH03	03	19		1230		1			
JFOS2BH02-10	JFOS2BH02	10	20		1045		1			

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\CO( )C.DOC

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0917
Received by:		Nhan Pham	FEBI	10/9/13	0917
Relinquished by:					
Received by:					

310154

SAMPLE CHAIN OF CUSTODY ME 10-9-13 005

Send Report to Deborah Gardner
Company SoundEarth Strategies, Inc.
Address 2811 Fairview Avenue E, Suite 2000
City, State, ZIP Seattle, WA 98102
Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.: Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)
PO #: 0995-001-04

REMARKS: H-33

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOSD-BH03-07	JFOSDBH03	07	21	10-8-13	1235	Soil	1			
JFOSD-BH03-12	JFOSDBH03	12	22		1240	Soil	1			
JFOSD-BH03-18		18	23		1245		1	X	X	
JFOSD-BH03-20		20	24		1250		1	X	X	
JFOSD-BH03-22		22	25		1255		1	X	X	
JFOSD-BH03-24		24	26		1300		1	X	X	
JFOSD-BH03-26		26	27		1305		1	X	X	
JFOSD-BH03-28		28	28		1310		1	X	X	
JFOSD-BH03-30		30	29		1315		1	X	X	Samples received at 5 °C
JFOSD-BH03-32		32	30		1400		1	X	X	

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Received by:	Nhan Pham	FB&T	10/9/13	0917
Relinquished by:				
Received by:				

310154

SAMPLE CHAIN OF CUSTODY ME 10-9-13

COC 4 of 6

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.	PO #
Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)	0995-001-04

REMARKS

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOS2-BH03-34	JFOS2-BH03	34	31	10-8-13	1405	Soil	1	X	X	
JFOS2-BH04-02	JFOS2-BH04	02	32		1420		1			
JFOS2-BH04-07	JFOS2-BH04	07	33		1425		1			
JFOS2-BH04-12	JFOS2-BH04	12	34		1430		1			
JFOS2-BH04-12(Duplicate)		12	35		1435		1			
JFOS2-BH04-17	JFOS2-BH04	17	36		1440		1	X	X	
JFOS2-BH04-19	"	19	37		1455		1	X	X	
JFOS2-BH04-19(Duplicate)	"	19	38		1450		1	X	X	
JFOS2-BH04-21	JFOS2-BH04	21	39		1455		1	X	X	Samples received at 5 °C
JFOS2-BH04-23	"	23	40		1500		1	X	X	

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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
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Received by:	Khan Phan	FEBI	V	V
Relinquished by:				
Received by:				

310154

SAMPLE CHAIN OF CUSTODY ME 10-9-13

Page # 5 COS of 6

Send Report to Deborah Gardner

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Address 2811 Fairview Avenue E, Suite 2000

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Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.	PO #
Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)	0995-001-04

REMARKS

Hold

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: PCBs by U.S. EPA Method 8082	ANALYSES REQUESTED: Total Organic Carbon	Notes
JFOSD-BH04-30	JFOSD-BH04	30	41	10-8-13	1505	Soil	1	X	X	
JFOSD-BH04-32		32	42		1515	Soil	1	X	X	
JFOSD-BH04-34		34	43		1520	Soil	1	X	X	
JFOSD-BH05-00	JFOSD-BH05	00	44		1540		1			
JFOSD-BH05-07	JFOSD-BH05	07	45		1545		1			
JFOSD-BH05-10	"	10	46		1600		1			
JFOSD-BH05-14	"	14	47		1615		1			
JFOSD-BH05-18		18	48		1610		1	X	X	
JFOSD-BH05-20		20	49		1615		1	X	X	Samples received at 5 °C
JFOSD-BH05-20(Duplicate)		20	50		1620		1	X	X	

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Received by:	Nhan Pham	FEBI	10/9/13	V
Relinquished by:				
Received by:				

310154

SAMPLE CHAIN OF CUSTODY ME 10-9-13

Page # 6 of 6 C05

Send Report to Deborah Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature)

PROJECT NAME/NO.	PO #
Jorgensen Forge Outfall Site, Phase 4A (JFOS2-4A)	0995-001-04

REMARKS

Hold

TURNAROUND TIME
Standard (2 Weeks)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	PCBs by U.S. EPA Method 8082	Total Organic Carbon							Notes
JFOSD-BHC5-22	JFOSD-BHC5	22	51	10-8-13	1625	Soil	1	X	X							
JFOSD BHC5-24	JFOSD-BHC5	24	52	"	1630		1	X	X							
JFOSD-BHC5-28	JFOSD-BHC5	28	53	"	1635		1	X	X							
JFOSD-BHC5-30	JFOSD-BHC5	30	54	"	1640		1	X	X							
JFOSD BHC5 34		34	55	"	1645		1	X	X							
JFOSD-BHC5 35		35	56	"	1650		1	X	X							
Trip Blank	—	—	57	—	—	Soil	1	X	X							
																Samples received at 5 °C

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Relinquished by:	Chris Cass	SoundEarth Strategies, Inc.	10-9-13	0912
Received by:	Nhan Phan	FBI	✓	✓
Relinquished by:				
Received by:				

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APPENDIX C

DATA VALIDATION REPORT

Data Validation Report

Jorgensen Forge Outfall Site Phase 4A Soil/Bank Material Sampling
Seattle, Washington

Laboratory Project Numbers:

310151
310154

Prepared for:

SoundEarth Strategies, Inc.
2811 Fairview Ave East, Suite 2000
Seattle, Washington 98102

Prepared by:

Pyron Environmental, Inc.
3530 32nd Way, NW
Olympia, WA 98502

Approved By: _____ Date: ***12/11/2013***

Mingta Lin, Senior Project Chemist

ACRONYMS

%	percent
%D	percent difference
$\%D_f$	percent drift
%R	percent recovery
%RSD	percent relative standard deviation
CCB	continuing calibration blank
CCV	continuing calibration verification
CF	calibration factor
CLP	U.S. EPA Contract Laboratory Program
COC	chain-of-custody
ECD	electron capture detector
EPA	U.S. Environmental Protection Agency
F&BI	Friedman & Bruya, Inc. – Seattle, Washington
ICAL	initial calibration
ICB	initial calibration blank
ICV	initial calibration verification
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MDL	method detection limit
mg/kg	milligram per kilogram
MS	matrix spike
MSD	matrix spike duplicate
NFGs	CLP National Functional Guidelines for Data Review (EPA 2008 – Organics; EPA 2010 - Inorganics)
PCBs	polychlorinated biphenyls
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
RF	response factor
RL	reporting limit
RPD	relative percent difference
SDG	sample delivery group
TOC	total organic carbon

INTRODUCTION

This report presents and discusses findings of the data validation performed on analytical data for soil and water samples collected during October 2013 for the referenced project. The laboratory reports validated herein were submitted by Friedman & Bruya, Inc. (F&BI) in Seattle, Washington.

A Stage 2B (as defined in EPA 2009) data validation was performed on these laboratory reports. The validation followed the procedures specified in USEPA CLP Functional Guidelines ([NFGs], EPA 2008 – Organics; EPA 2010 - Inorganics), with modifications to accommodate project and analytical method requirements. The numerical quality assurance/quality control (QA/QC) criteria applied to the validation were in accordance with those specified in the quality assurance project plan ([QAPP], Floyd|Snider, 2010), as modified in the Basis of Design Report (SoundEarth, 2013) and the current performance-based control limits established by the laboratory (laboratory control limits). Instrument calibration, frequency of QC analyses, and analytical sequence requirements were evaluated against the respective analytical methods.

Validation findings are discussed in each section pertinent to the QC parameter for each type of analysis. Qualified data with applied data qualifiers are summarized in the **Summary** section at the end of this report. Samples and the associated analyses validated herein are summarized as follows:

Field Sample ID	Laboratory Sample ID	Sampling Date	Sample Type	Analysis	
				PCBs	TOC
Rinsate Blank	310151-01	10/08/13	Water	X	
JFOS2-BH01-16	310154-07	10/08/13	Soil	X	X
JFOS2-BH01-18	310154-08	10/08/13	Soil	X	X
JFOS2-BH01-20	310154-09	10/08/13	Soil	X	X
JFOS2-BH01-22	310154-10	10/08/13	Soil	X	X
JFOS2-BH01-24	310154-11	10/08/13	Soil	X	X
JFOS2-BH03-18	310154-23	10/08/13	Soil	X	X
JFOS2-BH03-20	310154-24	10/08/13	Soil	X	X
JFOS2-BH03-22	310154-25	10/08/13	Soil	X	X
JFOS2-BH03-24	310154-26	10/08/13	Soil	X	X
JFOS2-BH03-26	310154-27	10/08/13	Soil	X	X
JFOS2-BH03-28	310154-28	10/08/13	Soil	X	X
JFOS2-BH03-30	310154-29	10/08/13	Soil	X	X
JFOS2-BH03-32	310154-30	10/08/13	Soil	X	X
JFOS2-BH03-34	310154-31	10/08/13	Soil	X	X
JFOS2-BH04-17	310154-36	10/08/13	Soil	X	X

Field Sample ID	Laboratory Sample ID	Sampling Date	Sample Type	Analysis	
				PCBs	TOC
JFOS2-BH04-19	310154-37	10/08/13	Soil	X	X
JFOS2-BH04-19 (Duplicate)	310154-38	10/08/13	Soil	X	X
JFOS2-BH04-21	310154-39	10/08/13	Soil	X	X
JFOS2-BH04-23	310154-40	10/08/13	Soil	X	X
JFOS2-BH04-30	310154-41	10/08/13	Soil	X	X
JFOS2-BH04-32	310154-42	10/08/13	Soil	X	X
JFOS2-BH04-34	310154-43	10/08/13	Soil	X	X
JFOS2-BH05-18	310154-48	10/08/13	Soil	X	X
JFOS2-BH05-20	310154-49	10/08/13	Soil	X	X
JFOS2-BH05-20 (Duplicate)	310154-50	10/08/13	Soil	X	X
JFOS2-BH05-22	310154-51	10/08/13	Soil	X	X
JFOS2-BH05-24	310154-52	10/08/13	Soil	X	X
JFOS2-BH05-28	310154-53	10/08/13	Soil	X	X
JFOS2-BH05-30	310154-54	10/08/13	Soil	X	X
JFOS2-BH05-34	310154-55	10/08/13	Soil	X	X
JFOS2-BH05-35	310154-56	10/08/13	Soil	X	X
Trip Blank	310154-57	10/08/13	Water	X	

Notes:
PCBs – Polychlorinated biphenyls
TOC – Total organic carbon
X – The analysis was requested and performed on the sample.

The analytical parameters requested for the samples, the respective analytical methods, and the analytical laboratories are summarized below:

Parameter	Analytical Method	Analytical Laboratory
PCB Aroclors	SW846 Method 8082A	Friedman & Bruya, Inc. (F&BI) Seattle, Washington
Total Organic Carbon	SW846 Method 9060	Fremont Analytical, Inc. Seattle, Washington

Note: SW846 - *USEPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846, Third Edition, December 1996.

DATA VALIDATION FINDINGS

1. PCB Aroclors (EPA Method SW8082A)

1.1 Sample Management and Holding Times

No anomalies were identified in relation to sample preservation, handling, and transport as discussed in Section 1.1.

Soil samples should be extracted within 14 days and water samples within seven days of collection. Sample extracts should be analyzed within 40 days of extraction. All samples were extracted and analyzed within the required holding times.

1.2 Initial Calibration

The method requires that (1) a minimum of 5-point calibration be performed using the mixture of Aroclor 1016 and 1260, (2) a single-point calibration be performed for the other five Aroclors to establish calibration factors (CFs) and for Aroclor pattern recognition, (3) at least 3 peaks (preferably 5 peaks) must be chosen for each Aroclor for characterization, (4) the %RSD values of Aroclor 1016 and 1260 CFs must be ≤20%, and (5) if dual column analysis is chosen, both columns should meet the requirements. All ICALs met the requirements.

1.3 Calibration Verification

Calibration verifications were performed at the required frequency. %D values were either within ±20%, or the exceedance had no adverse effects on data usability (*e.g.,* biased high CCV recovery for a compound not detected in samples), with the exceptions as follows:

SDG	CCV ID	Compound	%D	Bias	Affected Sample	Data Qualifier
310154	GC7 10/16/13, 6:41	Aroclor 1016	24.0%	Low	JFOS2-BH04-30	J

1.4 Blanks

Method Blank: Method blanks were prepared and analyzed as required. PCB Aroclors were not detected at or above the reporting limits (RLs) in the method blanks.

Trip Blanks and Rinsate Blanks: One trip blank and one rinsate blank were submitted for PCB Aroclors analysis. PCB Aroclors were not detected at or above the RLs in these blanks.

1.5 Surrogate Spikes

Surrogate spikes were added to all samples as required by the method. All surrogate spike %R values were either within the laboratory control limits, or not applicable for data quality evaluation due to required extract dilution (for elevated Aroclor levels in the samples). No data were qualified based on surrogate spike recovery.

1.6 Matrix Spike and Matrix Spike Duplicate (MS/MSD)

MS/MSD analyses were performed on QC samples and project sample JFOS2-BH01-18 (Lab ID: 310154-08). The RPD value for Aroclor 1260 was outside the control limit (20%) in the MS/MSD performed on sample JFOS2-BH01-18. Since Aroclor 1260 was not detected in sample JFOS2-BH01-18; no data qualifying action was taken.

1.7 Laboratory Control Sample (LCS) and LCS Duplicate (LCSD)

LCS and LCSD analyses were performed as required by the method. All %R and RPD values were within the project control limits.

1.8 Method Reporting Limits

Sample-specific RLs were supported with adequate initial calibration concentrations. A great number of samples required dilution for the elevated levels of Aroclor 1254 or chemical interference in the samples; the RLs were elevated accordingly. The project-specific modifications to the QAPP (SoundEarth, 2013) recommended practical quantitation limits (0.1 mg/kg for all Aroclors) are considered achieved.

1.9 Field Duplicates

Field duplicates were collected for samples JFOS2-BH04-19 and JFOS2-BH05-20 respectively. Sample and field duplicate results, RPD (or concentration difference) values, and data qualification were presented in **Appendix A**.

1.10 Overall Assessment of PCB Aroclors Data Usability

Aroclor 1016, Aroclor 1242, Aroclor 1254, Aroclor 1260, Aroclor 1262 were present in sample JFOS2-BH04-30. Due to the possible overlapping congeners between Aroclor groups, the reported values for these Aroclors might have been over-estimated. These Aroclor results were therefore qualified (J) as estimated.

PCB Aroclor data are of known quality and acceptable for use, as qualified.

2. Total Organic Carbon (TOC) (EPA Method SW9060)

2.1 Holding Times

Soil samples should be analyzed within 28 days of collection for TOC. All samples were analyzed past the required holding time by 17 to 20 days. TOC results for all samples reviewed herein were qualified (UJ) for non-detects and (J) for detections as estimated.

2.2 Initial Calibration

ICALs were performed as required for TOC analysis. The linear regression correlation coefficient (r) was >0.995 for all ICAL curves.

2.3 Calibration Verification

ICV and CCV analyses were performed at the required frequency. All %R values were within the control limits of 85 – 115%.

2.4 Blanks

Method Blanks: Method blanks were analyzed at the required frequency. TOC was not detected at or above the RLs in the method blanks.

Initial Calibration Blank and Continuing Calibration Blanks (ICB/CCB): ICB/CCBs were analyzed at the required frequency. TOC was not detected at or above the RLs in the ICB and CCBs.

2.5 Laboratory Duplicate Analysis

Laboratory duplicate analyses were performed on project samples at the required frequency. All RPD values were within the acceptance criterion (20%).

2.6 Laboratory Control Samples

The LCS analyses were performed as required by the method. The %R values were within the laboratory control limits.

2.7 Matrix Spike (MS) and MS Duplicate (MSD)

MS/MSD analyses were performed on project samples at the required frequency. The %R and RPD values met the laboratory control limits.

2.8 Reporting Limits

RLs were supported with adequate initial calibration concentrations. The TOC value reported for sample JFOS2-BH03-20 exceeded the instrument calibration range; the result was qualified (J) as estimated.

2.9 Field Duplicates

Field duplicates were collected for samples JFOS2-BH04-19 and JFOS2-BH05-20 respectively. Sample and field duplicate results, RPD (or concentration difference) values, and data qualification were presented in **Appendix A**.

2.10 Overall Assessment of TOC Data Usability

Based on the information submitted by the laboratory, TOC data are acceptable for use.

SUMMARY

Table I. Data Affected by QC Anomalies

Laboratory ID	Sample ID	Analyte	Qualifier	Qualified Reason	Report Section
310154-41	JFOS2-BH04-30	Aroclor 1016	J	CCV recovery biased low.	1.3
310154-41	JFOS2-BH04-30	Aroclor 1016 Aroclor 1242 Aroclor 1254 Aroclor 1260 Aroclor 1262	J	Potential matrix interference due to presence of multiple Aroclors in the sample.	1.10
310154	All Samples in this SDG	TOC	J/UJ	The analysis was performed past the required holding time.	2.1
310154-24	JFOS2-BH03-20	TOC	J	The reported value exceeded instrument calibration range.	2.8
310154-37 310154-38	JFOS2-BH04-19 JFOS2-BH04-19 (Duplicate)	Aroclor 1254	J	Field duplicate RPD value was >35%.	Appendix A

Note:
CCV – Continuing calibration verification
J/UJ – Detections were qualified (J) and non-detects qualified (UJ).
RPD – Relative percent difference

Table II. Data Qualifier Definition

Data Qualifier	Definition
J	The analyte was detected above the reported quantitation limit, and the reported concentration was an estimated value.
R	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was considered not detected at the reporting limit or reported value.
UJ	The analyte was analyzed for, and the associated quantitation limit was an estimated value.

REFERENCES

USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review,* Office of Superfund Remediation and Technical Innovation, U.S. Environmental Protection Agency, January 2010, USEPA 540/R-10/011.

USEPA *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use,* January 13 2009, EPA 540-R-08-005.

USEPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,* Office of Superfund Remediation and Technical Innovation, U.S. Environmental Protection Agency, June 2008, USEPA-540-R-08-01.

USEPA *Test Methods for Evaluating Solid Waste (SW-846). Third Edition and Revised Update IIIA.* Office of Solid Waste and Emergency Response, Washington, D.C. April 1998.

Jorgensen Forge Outfall Site Seattle, Washington Source Control Action 15-inch and 24-inch Pipes Cleanout Work Plan, Appendix B - Sampling and Analysis Plan/Quality Assurance Project Plan, Floyd|Snider, December 17, 2010. & Modification (SoundEarth Strategies, Inc., October 2013).

Appendix A

Field duplicate RPD is indicative of field and laboratory precision and sample homogeneity in combination. The CLP National Functional Guidelines or *Work Plan* do not specify criteria for field duplicate evaluation. An advisory criterion of 35% was applied to evaluating the RPD values of field duplicate results that are ≥5xRL. For results that are <5xRL, an advisory criterion of ±2RL was applied to evaluating the concentration differences. The RPD (or concentration difference as applicable) values and data qualification for detected compounds in field duplicates are presented as follows:

Analyte	Units	RL	Parent & Field Duplicate Sample Result		RPD	Difference	Data Qualifier
			JFOS2-BH04-19	Duplicate			
PCB-Aroclor 1221	mg/kg	4	ND	ND	-	-	
PCB-Aroclor 1232	mg/kg	4	ND	ND	-	-	
PCB-Aroclor 1016	mg/kg	4	ND	ND	-	-	
PCB-Aroclor 1242	mg/kg	4	ND	ND	-	-	
PCB-Aroclor 1248	mg/kg	4	ND	ND	-	-	
PCB-Aroclor 1254	mg/kg	4	82	160	75%	-	J/J
PCB-Aroclor 1260	mg/kg	4	ND	ND	-	-	
PCB-Aroclor 1262	mg/kg	4	ND	ND	-	-	
PCB-Aroclor 1268	mg/kg	4	ND	ND	-	-	
Total Organic Carbon	%	0.05	1.88	1.53	21%	-	
			JFOS2-BH05-20	Duplicate			
PCB-Aroclor 1221	mg/kg	0.02	ND	ND	-	-	
PCB-Aroclor 1232	mg/kg	0.02	ND	ND	-	-	
PCB-Aroclor 1016	mg/kg	0.02	ND	ND	-	-	
PCB-Aroclor 1242	mg/kg	0.02	ND	ND	-	-	
PCB-Aroclor 1248	mg/kg	0.02	ND	ND	-	-	
PCB-Aroclor 1254	mg/kg	0.4	9.3	11	17%	-	
PCB-Aroclor 1260	mg/kg	0.02	ND	ND	-	-	
PCB-Aroclor 1262	mg/kg	0.02	ND	ND	-	-	
PCB-Aroclor 1268	mg/kg	0.02	ND	ND	-	-	
Total Organic Carbon	%	0.05	4.13	3.63	13%	-	

Notes:
% – Percent
mg/kg – milligram per kilogram
ND – The analyte was not detected at or above the RL.
RL – Reporting limit
RPD – Relative percent difference